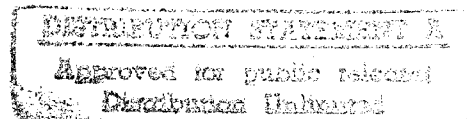

**FORT BLISS PROJECT 92-05:
INTENSIVE ARCHEOLOGICAL
SURVEY
OF 8.5 SQUARE KILOMETERS
NEAR THE NORTHERN
FRANKLIN MOUNTAINS
ON DONA ANA RANGE,
DONA ANA COUNTY,
NEW MEXICO**

by
**Mark Sale
Victor Gibbs**



**MISCELLANEOUS REPORT OF INVESTIGATIONS
NUMBER 57**



GEO-MARINE, INC.



US Army Corps
of Engineers
Fort Worth District

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DONA ANA COUNTY, NEW MEXICO**

by
Mark Sale
Victor Gibbs

Principal Investigator
Duane E. Peter

for
U.S. Army Corps of Engineers,
Fort Worth District

under
Contract No. DACA63-D-006
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MISCELLANEOUS REPORT OF INVESTIGATIONS
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Geo-Marine, Inc.
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Plano, Texas 75074

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ABSTRACT

This report represents the findings of an 8.5-km² area that was subjected to an intensive pedestrian survey east of and adjacent to the northern Franklin Mountains near Dona Ana Range Camp on Fort Bliss Military Reservation in Dona Ana County, New Mexico. The purpose of the investigations was to inventory and document archeological remains that are situated within the survey area. Geo-Marine, Inc. (GMI) conducted the survey under contract with the U. S. Army Corps of Engineers, Fort Worth District.

The project resulted in the location of 48 prehistoric sites, one historic site, and 582 isolated artifacts. Two major site types that appear to represent task-specific functions were recognized in the project area. The characteristics of the sites and the implications on prehistoric land use are discussed and treatment recommendations are made.

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Completion of the fieldwork and publication of this project would not have been possible without the dedicated assistance of the personnel involved. Special thanks go to the Fort Bliss Cultural Resources Laboratory archeologists, particularly Martha Yduarte, who provided endless assistance with previous survey records, maps, and advice.

The successful completion of fieldwork was guided by Sam McCulloch, project archeologist. Generous support of, and advocacy for, the necessary "quality control" revisitations to the field was provided by Dr. Stephen Mbutu. The dedication of both Dr. Mbutu and Duane Peter, primary investigator, to do a thorough job at all costs should not go without mention. Thanks go to the crew chiefs, Leonard Allen, Allen Rorex, and George Brown, as well as the crew members, Carolyn Barnes, William Goldsmith, Joe Ben Sanders, Darryl Pleasant, Bruce Boeke, Mark Morrison, Robert Hall, and last but certainly not least, Victor Gibbs.

Martha Sharp patiently served as laboratory supervisor. Victor Gibbs anchored the data base and provided invaluable assistance throughout every stage of the project. Allen Rorex illustrated the artifacts, Carol Hedrick edited the first draft, and Sharlene Allday edited the second draft and final report.

1

INTRODUCTION

This report presents the results of an intensive survey of 8.5 square kilometers within the Dona Ana Range, Fort Bliss Military Reservation, Dona Ana County, New Mexico. This survey was conducted as part of the mitigation program administered by the Historic Resources Management Program (HRMP) staff at Fort Bliss in partial fulfillment of the Department of the Army's obligations as defined by the National Historic Preservation Act of 1992, as amended (PL 102-575) and the National Environmental Policy Act (NEPA PL 91-190; 42 U.S.C. 4341). Designated as Mitigation Program Area #2, Project 92-05, the survey area lies 5 km southwest of Dona Ana Range Camp and 20 km north of El Paso, Texas in the area known as the Hueco Bolson (Figure 1).

The purpose of the intensive survey was to locate all archeological sites within the 8.5 square kilometer area. Since the area had been previously surveyed (Carmichael 1986), all previously recorded sites were to be relocated and redefined if necessary. The survey effort was conducted by Geo-Marine, Inc. (GMI), personnel during July 1992 in accordance with Fort Bliss Historic Resources Management Plan directives. Of the 50 previously recorded sites, several were redefined, five were not relocated, and two are likely represented by newly recorded sites in adjacent areas. Therefore, the survey resulted in the documentation of 49 historic properties.

This report contains eight chapters. A brief discussion of the previous investigations in the area is discussed in Chapter 2. The environmental and cultural setting of the project area is presented in Chapter 3. Chapters 4 and 5 present the survey methodology and results, respectively. A summary discussion and conclusions are provided in Chapters 6 and 7. Finally, a discussion of sites considered eligible for inclusion in the National Register of Historic Places is presented in Chapter 8.



Figure 1. Project area locational map.

2 PREVIOUS RESEARCH

The entire project area discussed in this report was investigated previously by Carmichael (1986) as part of a 991-km² survey of Maneuver Areas 3 through 8 (Figure 2). Twenty of the sites located during the GMI survey were previously recorded by Carmichael and defined on 1:3000 scale aerial photographs. Data from these sites were provided by Fort Bliss personnel and basic conclusions were drawn from the previous survey efforts that have been published (Carmichael 1986). Prior to Carmichael's survey, Whalen (1977, 1978, 1980) reported results of archeological surveys of Maneuver Areas 1 and 2 south and east of the current project area. In addition to these studies, an archeological inventory survey (Skelton et al. 1981) was conducted in 96 1-km² quadrats on Dona Ana Range. Several of these inventoried units were located in the immediate vicinity of the present study area (see Figure 2).

The environmental diversity of the Hueco Bolson and the associated prehistoric settlement patterns have been outlined by Whalen (1978:24-40; 1980:2) and Skelton et al. (1981:53). Such syntheses, which provide extensive data concerning site type and distribution, prove useful for any study of Hueco Bolson archeology. These reports together comprise the principal archeological reference resource for the Hueco Bolson region. However, inconsistencies in field methodologies limit detailed data comparisons in several respects. The most obvious of these variables are:

1. inconsistent use of aerial photographs prior to about 1980,
2. application of varying criteria for site definition, and
3. inconsistent, generally wide, survey transect intervals.

O'Laughlin (1987) completed an archeological survey of 5.8 km² on Fort Bliss in which 198 sites were recorded. This project resulted in a total of 193 prehistoric sites, or 33.3 sites per km², a comparatively high site density for the Hueco Bolson. Both site criteria and survey intervals used during O'Laughlin's project are identical to the current study and, therefore, the data are comparable.

Site FB1613, a large site adjacent to the northwest corner of the current project area, was excavated in 1988 by the Fort Bliss Historic Resources Management staff. The site contained materials indicative of the Paleo-Indian period as well as Formative period occupations (Carmichael 1986:Appendix E). The report of the excavation is still in preparation and little detail concerning these manifestations is currently available.

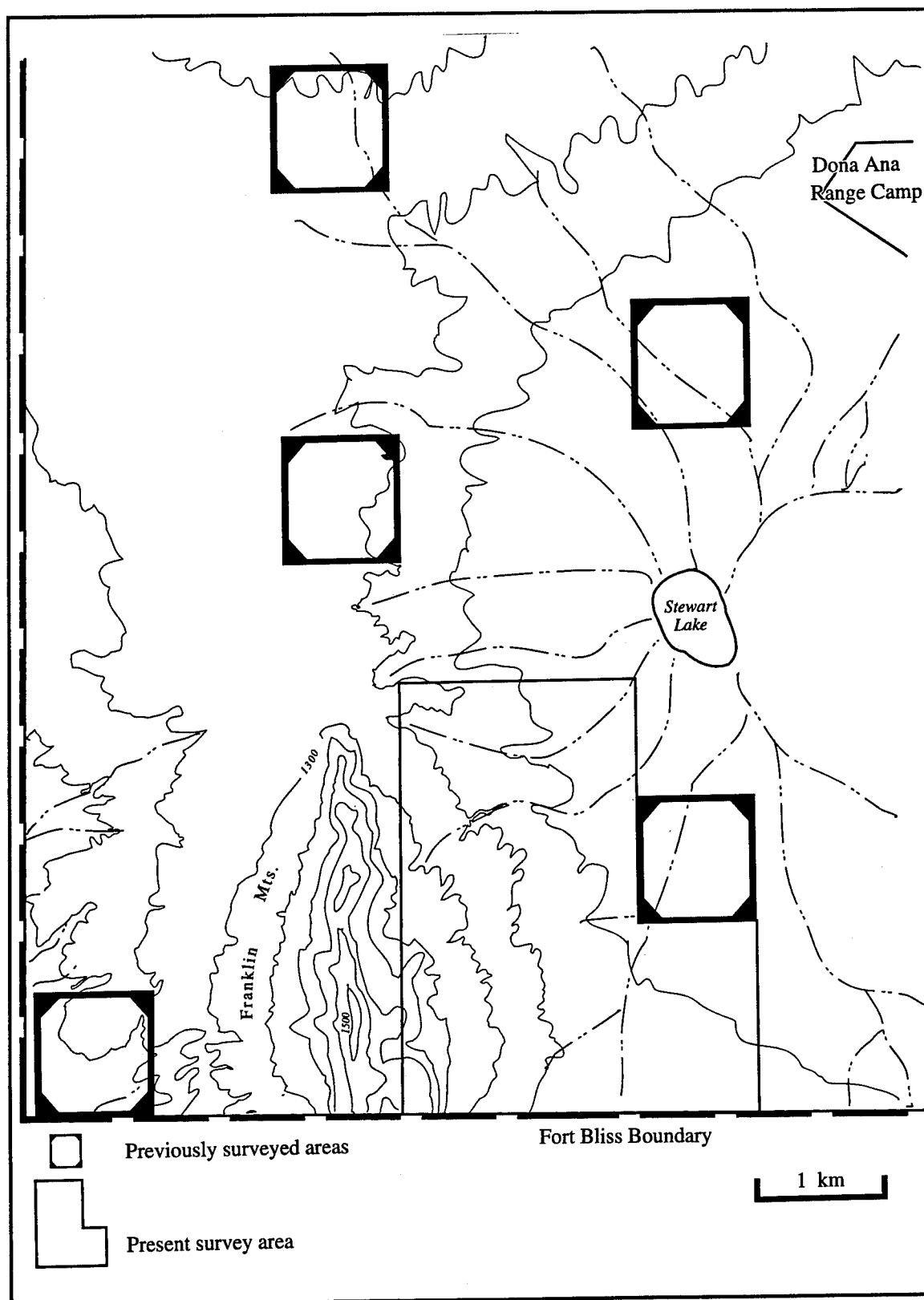


Figure 2. Map of previous and present survey boundaries.

3

PROJECT AREA

ENVIRONMENTAL SETTING

Topography

The project area consists of roughly 8.5 km² of high desert, runoff zone, and lowland ecozones (Whalen 1978:3) adjacent to the northernmost extension of the Franklin Mountains. The westernmost edge of the project area includes part of the Franklin Mountains limestone escarpment. This zone is cut by eastward flowing arroyos and is typified by Permian limestone bedrock. From west to east, the survey area is characterized by bedrock outcrops, steep alluvial fans, medium and low alluvial cuts, transitional zones, sandy plains, and sand dune areas (Carmichael 1986:48-53). Sandy soils become increasingly dominant toward the eastern side of the survey area, which includes alluvial ridge terminations or "distal fans" (Skelton et al. 1981:39) typified by low gradient alluvial/eolian soil associations. The eastern margins of the survey area ultimately grade into a bottom land that forms part of a large ponding basin or playa (Figure 3). This ponding area extends north and south at least 3 km, with Stewart Lake, a 600-m diameter playa, on the north end.

Angular chert gravels and blocky rubble occur in limestone matrix along the alluvial ridges as well as in pockets and veins in the bedrock. As the alluvial fans extend toward the desert floor, the size of the limestone rubble decreases and sandier soils and gravels predominate. The eastern margins of the alluvial (or distal) fans are typified by increasingly sandy soil content as they merge with the dune fields of the western Hueco Bolson. Less than one-third of the survey area includes such dune lands. The desert floor ponding area related to Stewart Lake extends into a small part of the survey area and includes fine silt and clays soils.

Naturally occurring chert outcrops, particularly Rancheria varieties, are visible in the limestone escarpments along the Franklin Mountains bordering the project area. Angular chunks, cobbles, and nodules frequently occur in the detrital, angular limestone debris common to the upper alluvial fans. In addition to the local bedded rhyolite and cherts, quartzite and obsidian from ancestral Rio Grande gravels are present along lower alluvial fan ridge tops.

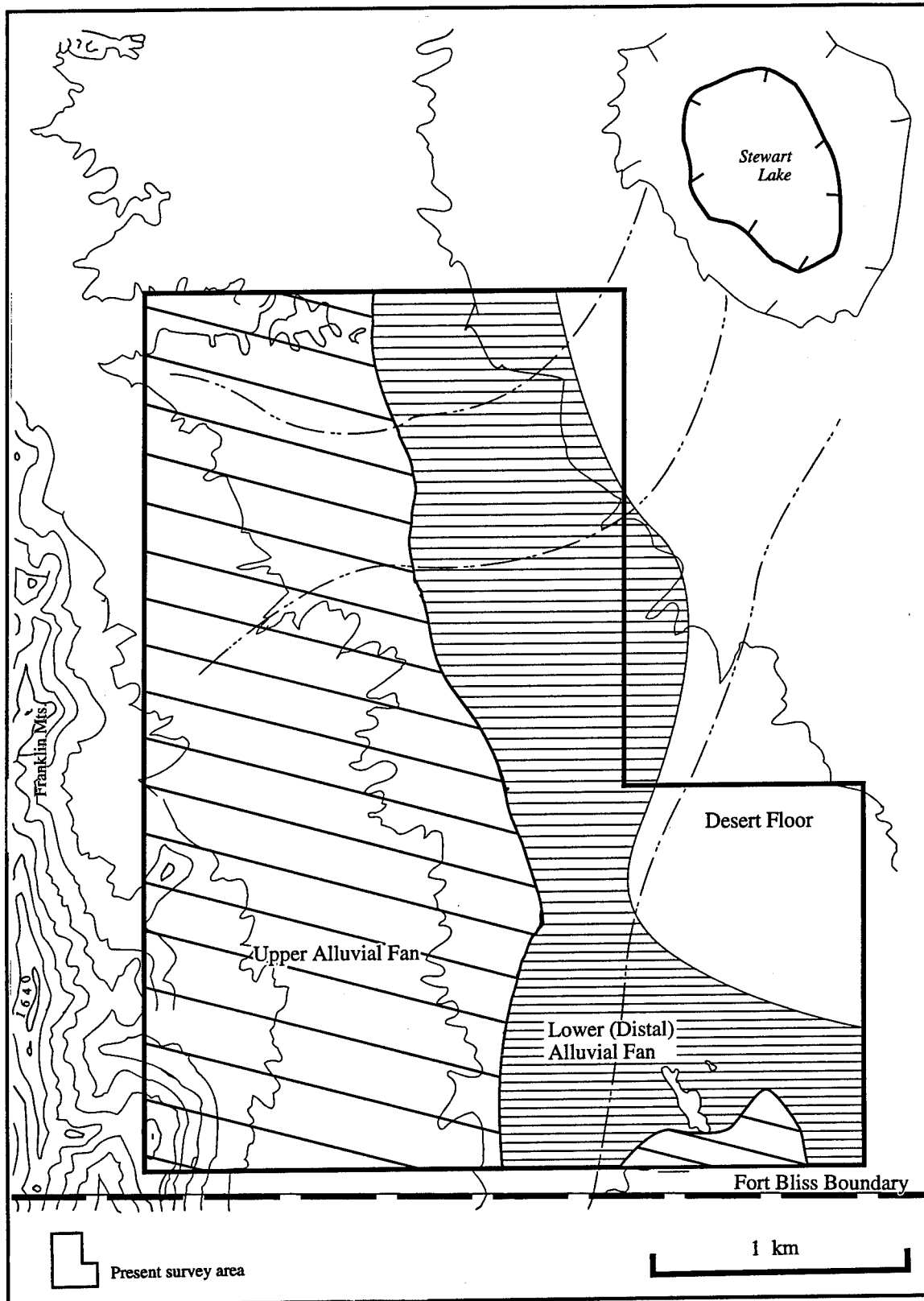


Figure 3. Map of study area topographic zones.

Vegetation

The Franklin Mountains escarpment and upper alluvial fans support ocotillo, cat claw acacia, creosote, sotol, agave, prickly pear, fishhook barrel cacti, bunch grasses, and remnant juniper. Shrubs such as sumac and squawbush occur in low frequency along the drainage cuts. To the east and downslope, the cacti, ocotillo, and cat claw are replaced by creosote, small mesquites, *Yucca elata*, and larger shrubs along drainages. On the alluvial fans near the desert floor mesquite and yucca increase in size and frequency.

Alternating zones of creosote and mesquite-dominated overstory are typical of the desert floor; both are accompanied by *Yucca elata* and dense stands of large shrubs along drainages. A wide variety of grasses, forbs, and small cacti, as well as four-wing saltbush and large mesquites, occur in areas subject to ponding.

Paleoenvironment

Prior to 10,000 B.C. climatic conditions of greater effective moisture than the present prevailed in the Southwest. Under these conditions, shallow lakes or playas along the desert floor probably held water year-round. The range of moisture-sensitive plants was increased during this period resulting in expanded forests. Pinon and juniper trees occurred at lower elevations than today, including favorable areas on the desert floor. The faunal assemblage included mammoth, horse, camel, antelope, extinct bison, tapir, sloth, and others.

Between about 10,000 and 9500 B.C. a period of decreased effective moisture resulted in desiccation of many of the desert lakes (Irwin-Williams 1979:31). Conditions of increased effective moisture returned between 9500 and 9000 B.C. This period is portrayed by Irwin-Williams as reflecting the equivalent of 3 to 4 inches increase in annual rainfall and a decrease of 3 to 4 degrees in mean annual temperature, as compared to the present. Rich grasslands supported by the increased moisture attracted herds of grazing animals. The earliest recognized cultural remains, those from the big game hunting activities of the Paleo-Indian culture, are assigned to this period.

Between 8600 and about 5000 B.C. another trend of decreasing moisture occurred. Extinction of the Pleistocene megafauna is correlated with continued desiccation during this period, and by circa 3000 B.C. all species present were entirely modern (Irwin-Williams 1979:32). By the end of the period, playas had dried and the climate had stabilized becoming similar to present conditions.

Within the past 300 years the Hueco Bolson has supported expansive grasslands with mixed patches of oak, mesquite, and juniper (Kenmotsu and Pigott 1977). After 1881 economic incentives encouraged overgrazing during periods of relatively high effective moisture. During times of less rainfall, droughts desiccated the region. Between 1885 and 1925 the desert grasslands had recovered to some extent from overgrazing, but by the end of this period erosion had removed most of the relatively thin top soil. The once extensive grama grasslands on the bolson floor could not recover and the desert scrub/coppice dune complex presently found within the project area expanded throughout the region.

CULTURAL BACKGROUND

Paleo-Indian Period

The Hueco Bolson and the Rio Grande valley near the present study area have been the setting for human activity since the Pleistocene. Site FB1613 produced Folsom materials (Department of the Army 1991:19), which suggest prehistoric utilization of the area since about 10,000 years ago. Though few actual sites have been recorded, surface finds of Clovis, Folsom, Plainview, and Plano projectile point styles are not uncommon locally, as evidenced by private collections and archeological survey results (Carmichael 1986:Table 23). Problems in site and component identification have drastically limited settlement pattern data for the Paleo-Indian period. Sufficient data exist, however, to indicate the presence of small camps along the desert floor in the Hueco Bolson (Carmichael 1989).

Archaic Period

Archaic period sites have been documented frequently in the Hueco Bolson and the surrounding region. Temporal assignment of this period rests primarily on diagnostic projectile point styles similar to those excavated from dated deposits. Samples of these point styles recovered from surficial contexts indicate a fairly continuous occupation of the region. Site types include lithic quarries, hunting camps, and processing areas, with habitation or structural sites less frequently reported. Carmichael (1986) documented 165 Archaic components in the Hueco Bolson. Significantly, Archaic sites appear on all landform units in the survey area:

Enough information exists, though, to suggest that the Archaic period shows use of the most varied site locations in the basin. This is seen to reflect the broad spectrum economy normally inferred for Archaic groups (Carmichael 1986:212).

This broad spectrum economy continues to be reflected in varying degrees during the periods that follow the Archaic in southern New Mexico, often leading to site reoccupation. Such superpositioning of artifact assemblages and features often obscure Archaic components on sites. Under these circumstances, multicomponent sites with Archaic components are commonly classified as Formative, based on surface assemblages that include ceramics.

Formative Period

The ceramic period sequence, as originally defined by Lehmer (1948), is well represented throughout the Hueco Bolson, Tularosa basin, and Rio Grande valley. Site types, distribution, and structural similarities demonstrate a general continuity from the Late Archaic to the early Formative period or Mesilla phase.

Mesilla Phase

The appearance of ceramic technology marks the Archaic to Mesilla phase transition at circa A.D. 1 (Department of the Army 1991). This period is associated with agricultural pursuits, on at least a part-time basis (Carmichael 1986). Mesilla phase sites are dispersed throughout the basin floor and are often associated with small playas. Carmichael (1986) argued that this pattern may be evidence for wild plant gathering and not farming activities. Larger, residential villages are usually situated along more permanent water sources such as the Rio Grande (Carmichael 1986:221). The Mesilla phase is generally

recognized by the presence of undecorated brownware ceramics with direct or pinched rims, and Mimbres black-on-white tradeware.

Dona Ana Phase

This phase, which tentatively dates from A.D. 1100 to 1200 (Department of the Army 1991) or A.D. 1200 to 1300 (Browning et al. 1991: 24), is the least understood phase of the ceramic period. While it is generally agreed that this phase represents a pithouse to pueblo structure transition, lack of excavated sites of this phase and recognition problems have precluded the formal definition of the phase. The Dona Ana phase is marked by the appearance of El Paso Bichrome and decorated polychrome ceramics, along with thickened vessel rim forms and intrusive ceramics such as Chupadero black-on-white, San Andres and Three Rivers Red-on-terra cotta, and St. Johns Polychrome. Surface adobe structures also appear during this phase, though pithouses persist as residential structures (Department of the Army 1991). Carmichael (1986) demonstrated concentration of populations during this phase, a marked departure from previous settlement patterns. This coalescence is taken as evidence of an increased reliance on farming and year-round occupation (Carmichael 1986:224). Carmichael's (1986:227) data further indicated that the Dona Ana phase comprises the most intensive use of the project area during prehistoric times.

El Paso Phase

Following the Dona Ana phase, the El Paso phase began around A.D. 1200 and lasted until circa A.D. 1400. This phase represents the pueblo period of the Jornada Mogollon cultural area and is marked by contiguous room residential structures, or pueblos, of adobe construction. The rims of the indigenous El Paso Polychrome decorated ceramic jars became everted and intrusive types such as Playas Red Incised, Lincoln Black-on-red, Gila Polychrome, Ramos Polychrome, and Los Lunas or Seco Smudged Corrugated occur in artifact assemblages. Settlement emphasis apparently shifted to the desert floor with a greater reliance on playas than during the preceding Dona Ana phase that demonstrated a locational preference for alluvial fans (Carmichael 1986:229). The El Paso phase settlement system resulted in smaller sites than those of the Dona Ana phase. Furthermore, El Paso phase sites, though more numerous, are less clustered than those of the preceding phase. El Paso phase marks the peak of Jornada Mogollon development. The occurrences of marine shell from the Pacific and Gulf coasts, copper bells from Mexico, and intrusive ceramics from distant areas increased significantly during this phase. Ceremonial development and social integration, as indicated by art motifs and large communal architecture, seem to have intensified during the El Paso phase (Carmichael 1986), just prior to regional abandonment.

Protohistoric Period

According to Carmichael (1986:16-17),

[t]here is little or no recognized archeological evidence for occupation of the region after A.D. 1400. Environmental change and attendant failure of adaptive systems have been invoked to explain the widespread pattern of apparent depopulation. Equally plausible, however, is the reversion of local occupants to less intensive adaptations. Thus, late prehistoric occupants of the region may have been involved in generalized adaptations like those known for the Apaches, Sumas, or Jumanos at the time of historic contact

The lack of recognized archeological evidence is a key point in Carmichael's statement. Documentation by Spanish chroniclers as well as ethnographic research (Sale and Laumbach 1989) confirms the presence of these cultural groups following the El Paso phase. Sites created by such protohistoric peoples have undoubtedly been located, but due to the lack of diagnostic remains, likely have been assigned to the Archaic period or remain unassigned.

Historic Period

Although El Paso del Norte served prominently in Spanish expedition and colonization efforts, little archeological evidence has been recorded outside the Rio Grande valley. Until around 1880 the threat of hostile Apaches and lack of water in the Hueco Bolson and Tularosa basin discouraged activities beyond well-watered areas and those protected by military forces. After 1880 prospecting and ranching were initiated in the project area. For a detailed discussion of this period, see Freeman (1977).

4 SURVEY METHODS

Prior to field work, the locations of previously recorded site boundaries and known clusters of isolates within survey unit boundaries were transferred from aerial photographs provided by Fort Bliss to field copies utilized during the survey. This enabled survey crews to anticipate and recheck the accuracy of site locations and boundary designations. Previously recorded site data also were summarized and cross-referenced in the field to confirm site content and feature locations. In several cases, two or more previously recorded sites determined to constitute a single site were combined and assigned the lower site number. Other sites that apparently were mislocated on aerial photographs during previous efforts were properly plotted and re-recorded by project personnel. As recommended by Fort Bliss, all re-recorded site files included a synthesis of data from Carmichael's survey, resulting in current, accurate, and inclusive records. The entire survey was conducted by walking north-south transects and subsequent survey parallel with the ridge tops to ensure that archeological manifestations were not missed. Because Carmichael's (1986:28) survey was conducted at 33-m intervals and the current survey at 15-m transects, 28 previously unrecorded sites were located and added to the data base. Both newly recorded and re-recorded large sites were revisited to verify accuracy of data and locational information.

Survey was conducted at 15-m intervals, following transects demarcated prior to fieldwork on 1:3000 aerial photocopies. Accurate counts of artifacts observed along a 2-m wide transect were recorded. Beyond the 2-m swath, artifacts and features were also recorded, but counts were estimated.

For data recording purposes, each UTM grid quad (1 square kilometer) was treated as a separate survey unit. By this means, each observation, consisting of artifact(s), feature(s), etc., were assigned consecutive numbers that included the survey grid designation for locational reference. Both survey and data recording methods were conducted using Fort Bliss forms and guidelines as listed in the August 1991 Fort Bliss Survey Record Form Format and Policies manual.

In addition to the standard Fort Bliss recording methods, descriptive site forms were designed by GMI and utilized to facilitate completion of pertinent state inventory forms as necessary. As required by Fort Bliss, projectile points, including diagnostic fragments, whole ground stone artifacts, samples of brownware rim sherds, intrusive ceramic samples, and obsidian samples were collected.

5 SURVEY RESULTS

Fifty prehistoric sites had been recorded previously within the area of current study. In several cases artifact clusters or features previously categorized as sites were found to actually lie within larger site limits (Figure 4). These were combined with the larger sites and assigned the lower (earlier) previously recorded FB site number (Table 1). Such sites have been redefined, delineated on aerial photographs and topographic maps, and site files have been updated.

Several sites were not relocated using existing records. In a few instances, similar undocumented sites were located nearby and considered most likely to represent the missing inventory (Table 2).

Previously published research on Fort Bliss has described varied criteria to define archeological sites. Carmichael (1986:24) defined a site as

an archaeological occurrence which contains any cultural feature, or alternatively, a minimum of ten artifacts within a 30 m radius.

Skelton's (1981:10) site definition was

not restricted to any strict quantitative or theoretical considerations of what constitutes a site. The only evidence of prehistoric peoples *not* recorded as sites were isolated single artifacts and very small scatters of unassociated pottery fragments, both of which presumably represent discarded or lost specimens.

O'Laughlin (1987:19) defined a site as

an archaeological occurrence consisting of at least one cultural feature or three artifacts such that the distance between any artifact and at least one other artifact is no more than 15 meters.

In keeping with current practice, the present Fort Bliss minimum site criteria was utilized during this study, which defines a site as

1. any isolated feature (e.g., a stain, isolated hearth, or concentration of fire-cracked rock or burned caliche containing at least 10 pieces greater than two centimeters in diameter, per four square meters, etc.) and

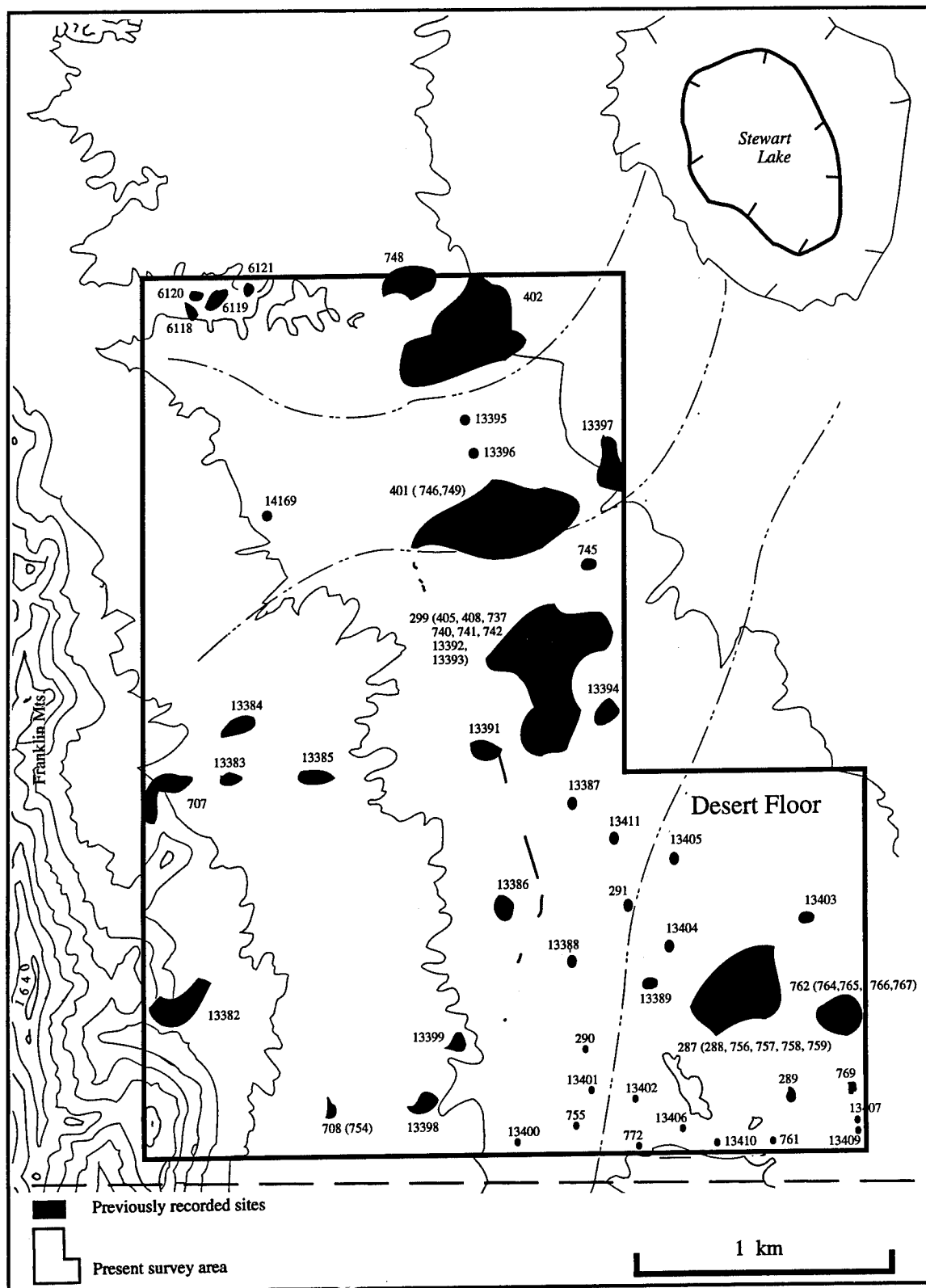


Figure 4. Map locating present site boundaries, including previously recorded sites that have been absorbed by current site boundaries.

Table 1
Sites Expanded to Include Previously Recorded Sites

Unit	FB#	Sites Assimilated
5450	708	754
5651	287	288,756,757,758,759
5651	762	764,765,766,767
5553	401	746,749
5552	299	405,408,409,737,740,741,742,13392,13393

Table 2
Sites Not Relocated

Unit	FB#	Site Type	Comments
55/53	407	Fire-cracked rock feature, lithics, brownware	Probably now 13397, located 70 m south of previously plotted location for 407
54/51	709	Lithics only	Not relocated (lithics relocated nearby)
56/51	760	Fire-cracked rock feature	Not relocated
56/50	768	Lithics, fire-cracked rock	Not relocated
55/51	773	Lithics, fire-cracked rock feature with stain	Not relocated
55/51	774	Fire-cracked rock feature	Possibly now 13390, located 100 m southeast
54/52	1297	Hearth in arroyo bank	Not relocated

2. any location where there are three or more different artifact classes (or material types) within a diameter of 30 meters.

SITE CLASSIFICATION

Within the sample of the Dona Ana Range sites recorded during this project, four site categories are clearly distinguishable, based on the following attributes:

1. lithics-only sites, indicative of quarrying or lithic reduction activities,
2. sites with hearth features with or without associated artifacts,
3. sites with ceramics, and
4. sites with middens.

The group of sites with features may be broken down further by separating feature-only or isolated hearth sites. Problems arise, however, when considering classification of isolated hearths with a few associated artifacts, or sites with several features and no artifacts. Further, the dynamics of alluvial and/or eolian soil deposition, with the potential to obscure surface observation, increasingly diffuse the categorical boundaries.

For the purpose of this report, which deals exclusively with a geographically localized set of site data, four general categories of sites types are recognized. It should be noted that all these categories are not mutually exclusive. The group of sites with features may include sites with ceramics and vice versa. Sites with middens may include hearth features and ceramics. These categories are simply attribute-based groups, separated into sets of shared traits for the sake of analytical perspective and discussion.

Lithics-Only Sites

Lithics-only sites are defined as those sites that meet or exceed the Fort Bliss minimum site criteria for chipped stone artifact density, but do not include ceramics, ground stone, fire-cracked rock, or features. Lithics comprise the only artifact class found on this category of sites, which represent lithic quarrying and/or lithic reduction locations.

Sites with Features

Feature types recorded on sites within the project area include hearths (localized concentrations of fire-cracked rock or burned caliche, with or without staining), charcoal stains, burned rock middens or roasting pits, and middens composed of extensive stains with associated cultural materials. Sites containing fire-cracked rock lacking sufficient frequency to qualify as features are included in this group since the presence of fire-cracked rock indicates the occurrence of such features, now eroded or otherwise disarticulated. Attributes of sites with features range from isolated features without associated artifacts, to extensive areas exhibiting several classes of artifacts and multiple feature types. To enhance analytical perspectives, this admittedly broad category of sites may be broken down into smaller groups, based on attributes. Such divisions allow discussion of isolated features, features with low density assemblages, sites with ceramics, as well as large, more complex sites with middens in more appropriate contexts.

Sites With Ceramics

This category includes all sites that include ceramics, regardless of frequency or other attributes. A single ceramic sherd qualifies a cultural property for inclusion in this group, which represents a set of sites created or at least utilized, by prehistoric inhabitants during the Formative period. The sites with ceramics then, comprise a group based on temporally representative attributes.

Sites with Middens

Both burned rock middens and extensive stains were recorded on sites during this study. The burned rock middens typically consisted of thousands of fire-cracked rock fragments in an extensive, stained-soil matrix. Large stained areas observed did not always include significant quantities of fire-cracked rock, nor domestic trash typically representative of trash middens. The extent of staining, however, suggests functions other than that of hearth features, and therefore such deposits were tenuously recorded as middens. Though these two midden types are not considered to be functionally identical, the category of sites with middens includes both types.

SITE DENSITY AND DISTRIBUTION

Site distributional densities reported from previous surveys demonstrate variability as a result of inconsistency in survey intervals and varied site criteria, as well as topography and resource related factors. Carmichael's 1986 survey of 991 km² reflected a site density of 6.1 sites per km² in the inventoried area. Whalen's (1978) survey of 280 km² produced 9.9 sites per km² (O'Laughlin 1987:20) and Skelton et al. (1981:17) located 198 sites in 96 km², a density of 2.06 sites per km². Within the 8.5 km² recently surveyed during this project, 49 sites were located for a total site density of 5.8 sites per km². The consolidation of several previously recorded small sites into larger sites during the most recent survey (see Table 1) has resulted in a site density figure that is comparable to Carmichael's work. Site size, however, has been expanded to produce a significantly higher total site area (see Figure 4).

SITE ATTRIBUTES AND FREQUENCY

Lithics-Only Sites

Twelve lithics-only sites were located during this study (Table 3), resulting in an overall density of 1.4 lithics-only sites per km² in the total survey area.

Table 3
Attributes of Lithics-only Sites Located within Dona Ana Range

Unit	Site#	Size m ²	Ceramics			Lithics					Features					Topo Zone
			UB	EP rim	Other	Flake	Tool	Core	Hmrstn	Grstn	# of FCR	FCR fea	FCR/ stain	Hearth/ stain	Midden	
5650	289	1350	-	-	-	61	-	8	-	-	-	-	-	-	-	U
5451	707	4800	-	-	-	5	-	2	-	-	-	-	-	-	-	U
5450	708	4000	-	-	-	10	-	4	-	-	-	-	-	-	-	U
5650	761	750	-	-	-	9	-	2	-	-	-	-	-	-	-	U
5451	13382	8400	-	-	-	8	4	2	-	-	-	-	-	-	-	U
5452	13383	6750	-	-	-	4	7	4	-	-	-	-	-	-	-	U
5452	13384	9800	-	-	-	16	-	3	-	-	-	-	-	-	-	U
5452	13385	2000	-	-	-	18	-	6	-	-	-	-	-	-	-	U
5551	13386	1350	-	-	-	5	2	2	-	-	-	-	-	-	-	U
5551	13391	6000	-	-	-	25	1	5	-	-	-	-	-	-	-	U
5550	13398	2100	-	-	-	21	1	1	-	-	-	-	-	-	-	U
5550	13399	1350	-	-	-	25	-	1	-	-	-	-	-	-	-	U
Totals / 12 sites		48650	-	-	-	207	15	37	-	-	-	-	-	-	-	12
Average			-	-	-	17.3	1.3	3.1	-	-	-	-	-	-	-	U=100%

Sites with Features

Seventy-three percent (n=35) of the prehistoric sites include thermal features (or fire-cracked rock), an average of four sites with features per km². Fourteen sites contained features but did not include any artifacts whatsoever. Isolated features are represented at a rate of 1.6 sites per km² in the study area as a whole (Table 4).

Table 4
Attributes of Sites Consisting of Isolated Features Located within Dona Ana Range

Unit	Site#	Size m ²	Ceramics			Lithics					Features					Topo Zone
			UB	EP rim	Other	Flake	Tool	Core	Hmrstn	Grstn	# of FCR	FCR fea	FCR/ stain	Hearth/ stain	Midden	
5552	736	100	-	-	-	-	-	-	-	-	12	1*	-	-	-	L
5550	755	9	-	-	-	-	-	-	-	-	52	-	1	1	-	L
5453	6120	1	-	-	-	-	-	-	-	-	16	1	-	-	-	U
5551	13387	1	-	-	-	-	-	-	-	-	55	1	-	-	-	L
5551	13388	6	-	-	-	-	-	-	-	-	15	1	-	-	-	L
5551	13389	1	-	-	-	-	-	-	-	-	15	1	-	-	-	L
5553	13395	2	-	-	-	-	-	-	-	-	67	1	-	-	-	L
5553	13396	25	-	-	-	-	-	-	-	-	61	1	-	-	-	L
5550	13402	12	-	-	-	-	-	-	-	-	60	1	-	-	-	L
5651	13403	105	-	-	-	-	-	-	-	-	60	2	-	-	-	F
5651	13405	2	-	-	-	-	-	-	-	-	28	1	-	-	-	L
5650	13409	1	-	-	-	-	-	-	-	-	40	1	-	-	-	L
5650	13410	4	-	-	-	-	-	-	-	-	13	1	-	-	-	U
5551	13411	6	-	-	-	-	-	-	-	-	35	1	-	-	-	L
Totals / 14 sites		275	-	-	-	-	-	-	-	-	529	14	1	1	-	11 L=8% 2 U=14% 1 F=7%
Average		19.6									37.8	1	.07	.07		

*Feature on site 736 is now scattered.

Sixteen sites included features and extremely low artifact densities (Table 5). Total artifact counts for this latter category range from a single flake or ceramic sherd to 14 lithics and 34 ceramics in 700 m² (1 artifact per 15 m²). On low density sites, actual total counts were made of artifactual remains. (Artifact counts for the high density assemblages are based on transect-recorded materials. Accurate counts of artifacts observed within a 2-m wide transect were recorded. Beyond the 2-m swath, artifacts and features were also recorded, but counts were estimated.) Up to seven features were recorded on sites in this group and in six instances, the number of features observed was equal to or greater than the number of artifacts (FB772, FB769, FB13407, FB6118, FB6119, FB 745). Site density for this low density artifacts assemblage group falls just below 2 sites per km² within the study area.

Table 5
Attributes of Sites with Features and Low-Density Artifact Assemblages Located within Dona Ana Range

Unit	Site#	Size m ²	Ceramics			Lithics					Features					Topo Zone
			UB	EP rim	Other	Flake	Tool	Core	Hmrstn	Grstn	# of FCR	FCR fea	FCR/stain	Hearth/stain	Midden	
5551	291	625	-	-	-	1	-	-	-	-	146	1	1	-	-	L
5550	772	360	-	-	-	1	-	-	-	-	75	1	1	1	-	L
5651	13404	1	-	-	-	1	-	-	-	-	-	-	-	1	-	L
5650	13407	1	-	-	-	1	-	-	-	-	25	1	-	-	-	L
5453	6119	324	1	-	-	-	-	-	-	-	225	1	2	1	-	U
5651	762	39375	-	-	-	2	-	-	-	-	228	2	1	-	-	L
5650	769	320	2	-	-	1	-	-	-	-	77	-	1	2	-	L
5550	13400	1	-	-	-	3	-	-	-	-	15	-	1	-	-	-
5550	13401	25	-	-	-	2	-	1	-	-	16	1	-	-	-	L
5453	6118	450	-	-	-	3	1	-	-	-	183	7	-	-	-	U
5552	745	3000	-	-	-	2	-	1	-	-	385	4	1	-	-	L
5453	6121	1980	-	-	-	5	-	2	-	-	145	5	1	1	-	U
5552	13394	3900	5	-	-	2	-	1	-	-	211	1	-	-	-	L
5650	13406	400	1	-	-	3	-	2	1	1	3	-	-	1	-	U
5550	290	600	-	-	-	14	-	-	-	-	199	3	1	-	-	L
5553	13397	700	32	2	-	11	1	1	-	-	12	-	1	1	-	L
Totals / 16 sites		52062	41	2	-	52	2	7	1	1	1945	27	11	8	-	4 U=25% 12 L=75%
Average		3253.9	2.6	.1		3.3	.1	.4	.06	.06	121.6	1.7	.7	.5		

Sites with Ceramics

Twenty-three percent (n=11) of the prehistoric sites include ceramics (Table 6), averaging 1.3 ceramic sites per km² in the study area. Over half of these sites (n=6) contained five sherds or less and several may be multicomponent. FB287, for example, exhibited a single brownware sherd, yet contained 29 features. It seems unlikely that such manifestations are the results of Formative period activities marked by a single sherd. One reworked Late Archaic style projectile point was also collected, but since such diagnostics are not beyond question temporally, the site remains assigned to the Formative period, but may be allowed the addition of "suspected multicomponent" notation. With that situation duly noted, it should be reemphasized that the presence of any ceramics attest to Formative activity within a site and that alone forms the basis of the sites with ceramics category.

Table 6
Attributes of Sites Located within Dona Ana Range

Unit	Site#	Size m ²	Ceramics			Lithics					Features					Topo Zone
			UB	EP rim	Other	Flake	Tool	Core	Hmrstn	Grstn	# of FCR	FCR fea	FCR/ stain	Hearth/ stain	Midden	
5650	13408	140	3	0	0	6	0	1	1	1	0	0	0	0	0	U
5453	6119	324	1	0	0	0	0	0	0	0	225	1	2	1	0	U
5650	769	320	2	0	0	1	0	0	0	0	77	0	1	2	0	L
5552	13394	3900	5	0	0	2	0	1	0	0	211	1	0	0	0	L
5650	13406	400	1	0	0	3	0	2	1	1	3	0	0	1	0	U
5553	13397	700	32	2	0	11	1	1	0	0	12	0	1	1	0	U
5553	748	14400	65	3	0	19	0	1	0	0	1067	0	1	1	3	L
5553	401	130000	101	1	4	88	3	8	1	9	3021	9	7	3	7	L
5553	402	200000	969	14	1	89	1	7	2	12	977	1	1	2	10	L
5552	299	205800	39	4	3	84	5	27	0	5	3831	14	10	2	1	L
5651	287	140000	1	0	0	55	2	4	0	9	3004	12	15	1	1	L
Totals / 11 sites		695984	1219	24	8	358	12	52	5	37	12428	38	38	13	22	3 U=27% 8 L=64%
Average		63271.3	110.8	2.2	.7	32.5	1.1	4.7	.5	3.4	1129.8	3.5	3.5	1.2	2.0	

Sites with Middens

Five prehistoric sites with midden features were recorded during survey. All the sites with middens also contained ceramics (Table 7), although site (FB287) contained only one brownware sherd. While four of these sites include numerous hearth features (up to 29), site (FB748) exhibited no hearth features but did include several extensive stains (middens) and a possible roasting pit or burned rock feature. Sites with middens were located at a rate of .6 sites per km² in the study area.

Table 7
Attributes of Sites Located within Dona Ana Range

Unit	Site#	Size m ²	Ceramics			Lithics					Features					Topo Zone
			UB	EP rim	Other	Flake	Tool	Core	Hmrstn	Grstn	# of FCR	FCR fea	FCR/ stain	Hearth/ stain	Midden	
5553	748	14400	65	3	0	19	0	1	0	0	1067	0	1	1	3	L
5553	401	130000	101	1	4	88	3	8	1	9	3021	9	7	3	7	L
5553	402	200000	969	14	1	89	1	7	2	12	977	1	1	2	10	L
5552	299	205800	39	4	3	84	5	27	0	5	3831	14	10	2	1	L
5651	287	140000	1	0	0	55	2	4	0	9	3004	12	15	1	1	L
Totals / 5 sites		690200	1175	22	8	335	11	47	3	35	11900	36	34	9	22	5 L=100%
Average		138040	235	4.4	1.6	67	2.2	9.4	.6	7	2380	7.2	6.8	2.4	4.4	

DISTRIBUTION SUMMARY

Upper Alluvial Zone

Forty percent ($n=19$) of the total prehistoric sites are located in the Upper Alluvial zone. Approximately 4.5 km^2 of the study area lies within this zone, equating to 4.2 prehistoric sites per km^2 . Twelve of the sites are composed of lithics-only assemblages (Figure 5), producing a density of 2.7 lithics-only sites per km^2 . Though four sites are tightly clustered (FB6118-6121), only six prehistoric sites with thermal features occurred in the Upper Alluvial zone, for 1.3 sites with features per km^2 density. Artifacts observed on the four clustered sites with features (FB6118-6121) were few (from 1 to 7 pieces) and only two isolated hearths were located in the Upper Alluvial zone.

Lower Alluvial Fan Zone

With the exception of one isolated feature located on the desert floor, all the remaining 29 sites lie in the Lower Alluvial Fan zone. Eighty-six percent of the isolated features occur in this zone for a distributional density of four isolated features per km^2 . Sixty percent ($n=29$) of the total prehistoric sites lie within the Lower Alluvial Fan zone. With approximately three km^2 of the study area composed of the Lower Alluvial Fan zone, an overall site density of 10 sites per km^2 is represented.

Desert Floor Zone

Since cultural properties located within the Desert Floor zone are limited to one isolated feature, density for that zone correlates to one site per km^2 . With only approximately one km^2 of the study area situated on the desert floor, however, the implications of this data should be viewed with reservation.

Lithics-Only Sites

All the lithics-only sites are located within the Upper Alluvial zone (see Figure 3). Natural chert deposits frequently occur within the limestone outcrops and escarpment along the upper elevations of this ecozone. Rounded chert cobbles and obsidian nodules occur along the upper alluvial ridge tops, components of the Santa Fe gravels deposited by the Rio Grande prior to the Middle Pleistocene (Monger 1993:xii). The lithics-only sites recorded during this study consist of quarry and lithic reduction stations positioned along the upper alluvial fans to access these raw material resources.

Sites With Ceramics

Only 27 percent of the sites that exhibit ceramics are located in the Upper Alluvial zone; the remaining 73 percent occur in the Lower Alluvial Fan zone. Two of the three sites situated in the Upper Alluvial zone contain a single ceramic sherd. These three upper alluvial sites are three of the four smallest sites recorded that exhibit ceramics (see Table 6). These data suggest that the ceramic sites in the Upper Alluvial zone represent limited activity, task specific, and/or single episode utilization/visitation.

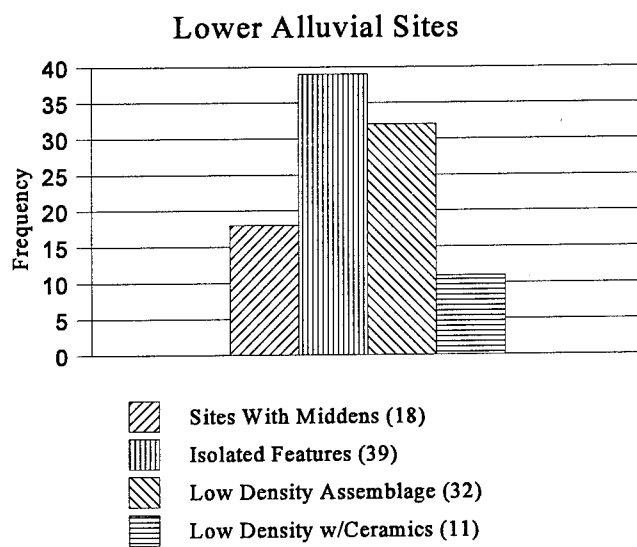
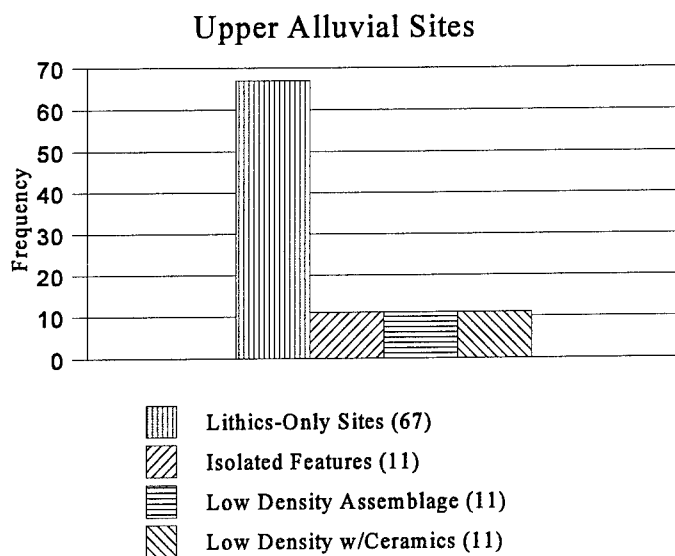


Figure 5. Site types by alluvial zone.

Sites With Middens

Slightly over 10 percent ($n=5$) of the prehistoric sites included middens. As many as 10 middens were observed on sites of this group, which also exhibit the highest artifact densities recorded within the study area. Fire-cracked rock frequencies ranging upwards of 1,000 pieces were documented on every site that exhibited middens. Of the total prehistoric sites recorded, only two (FB13406, FB13408) included ground stone and did not contain middens. Ceramics were also present on all sites with middens, though one such site (FB287) appears somewhat anomalous, with only a single sherd observed (see Table 7). All sites with middens lie within the Lower Alluvial Fan zone (see Figure 5), comprising a density of 1.7 sites per lower alluvial km^2 .

SITE ATTRIBUTE SUMMARY

Lithics

Lithic raw materials recorded in the study area were dominated by cherts at 77 percent of the 1,129 samples documented. Quartzites and obsidian appear second in frequency at 9 percent each. Lesser quantities of chalcedony and limestone follow in frequencies of 3 percent and 2 percent, respectively, with rhyolites and sandstone representing the lowest frequency of .7 percent. Chipped stone tools were documented at relatively low frequencies, with only 3 percent to 7 percent of site group assemblages composed of tools. Nearly half (47 percent) of the lithic tools consisted of unimarginally retouched flakes, followed in frequency by utilized flakes and bifaces at 13 percent each. Projectile points represent 6 percent and bimarginally retouched flakes 4 percent of the total study area sample.

Lithic assemblages generally appear quite similar throughout the study area (see Tables 3-7). Major variations in the assemblage expressed by the data as well as observations not included in the data tables are that:

1. lithics-only sites include higher frequencies of cortical, or primary flakes, and tested cobbles as well as tools,
2. cores occur most frequently on high density sites,
- 3 hammerstones were not documented on lithics-only sites, but did occur on 12 percent of the low density sites with features and 40 percent of the high density sites with middens.

While it is not unusual that the lithics-only sites exhibit a higher frequency of primary debitage (to be expected on quarry-related sites) and that the higher-density sites exhibit the most frequent occurrences of cores (likely a function of artifact density), the absence of hammerstones and the relatively high tool frequency on lithics-only sites seems a bit more perplexing. The most plausible explanations for the lack of hammerstones on quarry sites are considered to be:

1. the blocky limestone rubble surrounding the lithics-only sites did not provide readily available cobbles suitable for hammerstones and, therefore, hammerstones were carried to and from such sites, as needed, and/or
2. hammerstones were not easily recognized amidst the limestone rubble and river gravels littering the surface of sites located in the Upper Alluvial zone.

The high frequency of tools recorded on lithics-only sites (7) percent compared to 4 percent on low density sites and to 3 percent on sites with ceramics and those with middens is suspected to reflect sampling error. Seventy-two percent of the tools documented on lithics-only sites consist of unimarginally retouched flakes. The upper alluvial setting containing all the lithics-only sites typically

includes a detrital limestone surface matrix and most of the sites are located adjacent to steep escarpments. Slope action and animal traffic related impacts that result in lithic edge damage are common and should be expected under the circumstances. The lithic data may well reflect observations of edge damage, without recognition of its nature. Since no other artifact classes or features were present on these sites it is also considered likely that artifacts on lithics-only sites received more scrutinizing attention than those on other sites, resulting in higher levels of infield analysis.

Ground Stone

Ground stone raw materials recorded during survey were predominantly granitics at 42 percent and sandstone at 32 percent. Lesser quantities of rhyolite, quartzite, and limestone samples were noted (in descending frequency order). Whole and fragmentary manos slightly outnumber metate fragments (Figure 6) and three mano/metates were also documented. Of the total prehistoric sites, only 12.5 percent (n=6) included samples of ground stone. Four of the six sites with ground stone also included middens, and all sites with ground stone also contained ceramics. With 12.5 percent of the total prehistoric sites, and just over half (54.5 percent) (see Table 6) of the ceramic sites including ground stone, the processing of seed resources does not appear significant among site functions/activities, overall.

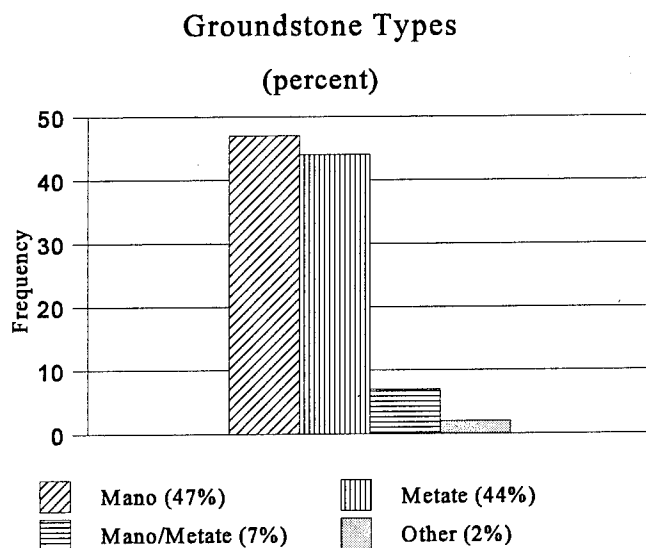


Figure 6. Groundstone types.

Sixty-seven percent of the sites with ground stone include middens (Table 8), surprisingly similar to recent findings in West Texas. Figures from survey near Sanderson, Marfa, and Van Horn, Texas, indicate 63 and 64 percent of sites with ground stone also include middens (Sale and Gibbs 1994).

Ceramics

Of the 1,290 ceramic sherds recorded, 97 percent consist of brownware body sherds. Additionally, brownware rimsherds comprise 1.6 percent of the total sample. Decorated wares total less than .7

Table 8
Attributes of Sites Located within Dona Ana Range

Unit	Site#	Size m ²	Ceramics			Lithics					Features					Topo Zone
			UB	EP rim	Other	Flake	Tool	Core	Hmrstn	Grstn	# of FCR	FCR fea	FCR/ stain	Hearth/ stain	Midden	
5650	13406	400	1	0	0	3	0	2	1	1	3	0	0	1	0	U
5553	401	130000	101	1	4	88	3	8	1	9	3021	9	7	3	7	L
5553	402	200000	969	14	1	89	1	7	2	12	977	1	1	2	10	L
5552	299	205800	39	4	3	84	5	27	0	4	3831	14	10	2	1	L
5651	287	140000	1	0	0	55	2	4	0	9	3004	12	15	1	1	L
5650	13408	140	3	0	0	6	0	1	1	1	0	0	0	0	0	U
Total / 6 sites		676340	1114	19	8	325	10	49	5	36	10835	36	33	9	19	2 U=33% 4 L=67%
Average		112723	185.6	3.2	1.3	54.1	1.7	8.2	.8	6	1805.8	6	5.5	1.5	3.2	

percent of the overall sample (Figure 7). These include three Mimbres Black-on-white sherds and seven El Paso Polychrome sherds. Ceramic density ranges from a single sherd documented on three of the sites to nearly 1,000 sherds on site FB402. Over half of the sites (n=6) exhibit five or fewer sherds, with the remaining five sites including 34 sherds or more.

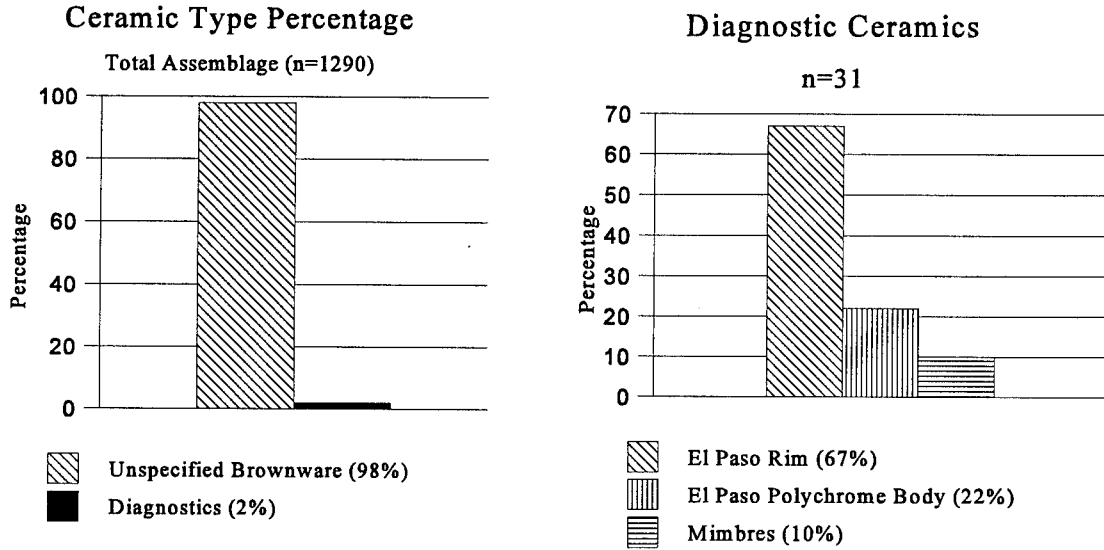


Figure 7. Ceramic type percentages.

Features

Excluding the lithics-only sites, 97 percent of the prehistoric sites include evidence of thermal features. Primary site function of the lithics-only group is inferred from location, assemblage, and lack of features. Little information is gained for the interpretation of functions of the remaining sites when lithics-only sites are included in tabulation of data from sites of more questionable nature.

Of the isolated hearth group, only one site included more than one feature. Interestingly, FB13403 contained two features and is the only site located on the desert floor proper. Ninety-three percent of the isolated feature sites consist of fire-cracked rock features, while a single site (FB755) consists of a lone charcoal stain.

Within the low density sites with features, up to seven features per site were recorded. This group of sites averaged 1.7 fire-cracked rock features, .7 fire-cracked rock features with stains, and .5 stains per site. Low density sites with features averaged 2.9 thermal features per site, overall.

The three low density sites located within the Upper Alluvial zone show significantly higher feature frequencies than those located along the Lower Alluvial Fan zone. These few upper alluvial sites average 4.3 fire-cracked rock features, 1.0 fire-cracked rock features with stain, and .6 stains per site. With these three sites removed from tabulations, low density sites with features located on the Lower Alluvial Fan zone average only .9 fire-cracked rock features, .7 fire-cracked rock features with stain, and .5 stain features per site.

Five sites include extensive stains and/or burned rock middens. Stains up to 30 m in diameter were noted in several instances, with seven documented on FB401. Sites with middens average 19.2 total features per site. Feature breakdown averages are: fire-cracked rock features 15.6+, stains (suspected hearths) 10.2+, burned rock middens or roasting pits 1.6+, and large stains or middens 4.4+ per site. These stains did not usually include high density artifacts (domestic refuse) included in typical trash middens. Occasionally, discrete concentrations of artifacts accompanied these "middens," but more often only low artifact densities were observed in association. Ceramics were inconsistently located within stained areas and ground stone artifacts were rarely observed. The absence of ground stone is considered significant to identification of potential structural remains; that is, any long-term or habitation site may be expected to include artifact classes related to a wide variety of activities. Therefore, the surface artifact assemblages associated with these extensive stains do not suggest permanent habitation structures or typical pithouses. O'Laughlin (1987:35) states,

large charcoal stains in the project area lack dense concentrations of artifacts which characterize trash deposits and have often been found to be the remains of structures when excavated.

If these stains represent structures, and if the surface assemblage is any indication, then they are probably temporary structures and not permanent residences. Site FB 13406 included a 3-m diameter stain exposed in an arroyo wall profile ca. 30-50 cm below the present ground surface. Five lithics, one hammerstone, one unspecified brownware sherd, and a metate were associated on the surface. The metate, a unifacial granitic basin form, was complete. Weighing at least 10 kg, the ground stone is not highly portable and supports the proposition of structural remains.

Historic Resources

One historic site was located during survey. FB H169 is located on the upper alluvial fan slopes near the north end of the project area. The site contains a 10-x-10-m area of excavated and banked soil resembling a small earthen tank, a scatter of cut nails, coal clinkers, barrel parts, stove and wagon parts,

and purple, aqua, and brown glass fragments. The artifacts indicate a time frame between 1869 and 1900.

The site location suggests mining-related activities and potential association with a road that once passed through the gap north of the Franklin Mountains. Freeman (1977) thoroughly discusses activities during this era in and around the project area, including a reference to Fred Schneider, who apparently prospected near Webb Gap (see Figure 2) and then moved north toward the Organ Mountains. Site H169 may well represent a Schneider prospecting camp circa 1890.

SITE DESCRIPTIONS

FB 13382

FB 13382 is a lithics-only site located on an alluvial fan in the foothill area of the northern Franklin Mountains. Elevation is 1330 m above mean sea level (amsl). This site is approximately 7.5 km south-southwest of the Dona Ana Range Camp and about .6 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 2.4 km to the northeast and an intermittent stream adjacent to the site. The site measures 140 x 60 m and contains chert cores, unmodified flakes, and unimarginally retouched flakes. The site probably represents a lithic procurement area but the retouched flakes may indicate a processing function.

FB 13383

FB 13383 is a lithics-only site on an alluvial fan in the foothills of the northern Franklin Mountains. The elevation is 1312 m amsl. The site is approximately 7 km south-southwest of the Dona Ana Range Camp and about 1.6 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 3.3 km to the northeast and an intermittent stream .5 km to the north. The site measures 90 x 75 m and contains chert cores, unmodified flakes, and unimarginally retouched flakes. This site may represent butchering activity or a lithic resource procurement area. No temporally diagnostic artifacts or features were observed. The site appears to be limited to surface artifacts and is typical of sites recorded during the survey in this topographical setting.

FB 13384

FB 13384 is a lithics-only site on an alluvial fan in the foothill area of the northern Franklin Mountains. Elevation is 1302 m amsl. The site is approximately 6.2 km south-southwest of the Dona Ana Range Camp and about 1.8 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 3 km to the northeast and an intermittent stream .4 km to the north. The site measures 140 x 70 m and contains chert cores, unmodified flakes, and obsidian flakes. A lithic concentration was observed and recorded as a feature. The site may represent a lithic resource procurement area.

FB 13385

FB 13385 is a lithic site on an alluvial fan in the foothill area of the northern Franklin Mountains. Elevation is 1293 m amsl. It is approximately 6.3 km south-southwest of the Dona Ana Range Camp and about 1.6 km north of the southern boundary of Dona Ana Range. The nearest hydrological features

are a playa 3 km to the northeast and an intermittent stream .7 km to the northwest. The site measures 80 x 25 m and contains chert cores, unmodified flakes, obsidian cores and flakes, and a flake concentration. This site may represent a lithic procurement source area.

FB 13386

FB 13386 is a lithic site on a limestone rise just south of a major arroyo that drains the northern Franklin Mountains. Elevation is 1278 m amsl. The site is approximately 6.9 km south-southwest of the Dona Ana Range Camp and about 1.2 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 3 km to the northeast and an intermittent stream .4 km to the north. The site measures 45 x 30 m and contains obsidian cores, unmodified obsidian flakes, and unmarginally retouched flakes. This site likely represents a lithic procurement area.

FB 13387

FB 13387 is an isolated hearth on an alluvial fan near the northern Franklin Mountains. Elevation is 1263 m amsl. It is approximately 7 km south-southwest of the Dona Ana Range Camp and about 1.5 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 2.1 km to the northeast and an intermittent stream .1 km to the north. The site measures 1 x 1 m and is composed of pieces of fire-cracked limestone and sandstone. No carbon stain was observed.

FB 13388

FB 13388, an isolated hearth, is on an alluvial fan adjacent to the northern Franklin Mountains. Elevation is 1260 m amsl. It is approximately 6.8 km south-southwest of Dona Ana Range Camp and about .9 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 3.2 km to the northeast and an intermittent stream 40 m to the west. The hearth measures 3 x 2 m and is represented by fire-cracked limestone. No carbon stain was observed at this site and no other cultural material was associated.

FB 13389

FB 13389 is an isolated hearth on an alluvial fan adjacent to the northern Franklin Mountains. Elevation is 1260 m amsl. The site is approximately 6.9 km south-southwest of the Dona Ana Range Camp and about 1 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 3.2 km to the northeast and an intermittent stream 90 m to the west. The hearth measures 1 x 1 m and is composed of fire-cracked limestone rock. No carbon stain was observed and no artifacts were found in association.

FB 13391

FB 13391 is a lithic site on an alluvial fan east of the northern Franklin Mountains. Elevation is 1269 m amsl. This site is approximately 5.5 km southwest of the Dona Ana Range Camp and about 1.9 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 2.5 km to the northeast and an intermittent stream .3 km to the south. The site measures 100 x 60 m and contains obsidian cores, unmodified obsidian flakes, chert cores, unmodified chert flakes, and a chert

projectile point. The area contains many tested obsidian nodules on the surface. The site appears to be a lithic resource procurement area concentrating on obsidian.

FB 13394

FB 13394 is a Formative period site on an alluvial fan east of the Franklin Mountains. Elevation is 1263 m amsl. The site is approximately 5.5 km south-southwest of the Dona Ana Range Camp and about 2.5 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 2 km to the northeast and an intermittent stream 90 m to the north. The site measures 65 x 60 m and contains unspecified brownware sherds, unmodified chert flakes, and a large feature containing over 200 fire-cracked limestone rocks. The site appears to be a temporary or seasonal camp. The quantity of fire-cracked rock in the feature suggests that it may represent a roasting pit for processing plant material.

FB 13395

FB 13395 is an isolated hearth on an alluvial fan near the northern Franklin Mountains. Elevation is 1260 m amsl. The site is approximately 5.2 km southwest of the Dona Ana Range Camp and about 3 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 1.8 km to the northeast and an intermittent stream .2 km to the north. The site measures 1 x 2 m and consists of fire-cracked limestone rock. No other artifacts were observed in association with this hearth.

FB 13396

FB 13396 is an isolated hearth on an alluvial fan adjacent to the northern Franklin Mountains. Elevation is 1260 m amsl. It is approximately 5.2 km southwest of the Dona Ana Range Camp and about 2.9 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 1.8 km to the northeast and an intermittent stream .3 km to the north. The site measures 5 x 5 m and is composed of fire-cracked limestone rock. The hearth appears to be articulated and subsurface carbon may be present. No other artifacts or features were observed in association with this hearth.

FB 13397

FB 13397 is a Mesilla phase site on an alluvial fan east of the northern Franklin Mountains. Elevation is 1254 m amsl. It is located approximately 5 km southwest of the Dona Ana Range Camp and about 2.7 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 1 km to the northeast and an intermittent stream adjacent to the south. The site measures 35 x 20 m and contains El Paso Brown rim sherds, unspecified brownware, unmodified flakes, cores, and an Archaic projectile point. The projectile point appears to have been reshaped to form a drill or other piercing tool. Two features were present: one fire-cracked limestone rock concentration with associated carbon stain, and one stain without fire-cracked rock. This site may have been recorded previously as FB 407, which was plotted about 80 m to the north, but not relocated during this survey.

FB 13398

FB 13398 is a lithic scatter on an upper foothill slope of the northern Franklin Mountains. Elevation is 1284 m amsl. It is approximately 7.2 km south-southwest of the Dona Ana Range Camp and about .4 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 3.5 km to the northeast and an intermittent stream .7 km to the east. The site measures 30 x 70 m and contains unmodified flakes, cores, and utilized flakes. Material types include quartzite and chert. This site appears to be a lithic procurement area as no features or other classes of artifacts were observed.

FB 13399

FB 13399 is a lithic scatter on an upper alluvial ridge slope in the northern Franklin Mountains. Elevation is 1281 m amsl. The site is approximately 6.7 km south-southwest of the Dona Ana Range Camp and about .6 north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 3 km to the northeast and an intermittent stream .6 km to the east. It measures 45 x 30 m and contains unmodified quartzite flakes, unmodified chert flakes, tested quartzite cobbles, obsidian debitage, a chert core, and 30-06 cartridge cases. Site activities appear to have been focused on lithic procurement as no features or other classes of artifacts were noted.

FB 13400

FB 13400 is an isolated hearth on an alluvial fan east of the northern Franklin Mountains. Elevation is 1273 m amsl. The site is located approximately 7.2 km south-southwest of the Dona Ana Range Camp and about 150 m north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 3.5 km to the northeast and an intermittent stream .2 km to the east. The site measures 1 x 1 m and is composed of fire-cracked limestone rock and a stain. Chert flakes were observed within the site area.

FB 13401

FB 13401 is a lithic scatter on an alluvial fan adjacent to the northern Franklin Mountains. Elevation is 1272 m amsl. It is approximately 6.7 km south-southwest of the Dona Ana Range Camp and about .4 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 3 km to the northeast and an intermittent stream 60 m to the east. The site measures 5 x 5 m and contains chert cores, unmodified flakes, unmodified quartzite flakes, and a feature consisting of fire-cracked limestone rock.

FB 13402

FB 13402 is an isolated hearth on an alluvial fan adjacent to the northern Franklin Mountains. Elevation is 1270 m amsl. The site is approximately 6.5 km south-southwest of the Dona Ana Range Camp and about .3 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 2.8 km to the northeast and an intermittent stream 80 m to the west. It measures 6 x 2 m and contains fire-cracked limestone rocks concentrated in a 1.5-x-1-m area. No carbon stain was observed in association with this feature and no other artifacts were recorded.

FB 13403

FB 13403 consists of two isolated hearths on an alluvial fan near the northern Franklin Mountains. Elevation is 1266 m amsl. The site is approximately 5.9 km south-southeast of the Dona Ana Range Camp and about 1 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 1 km to the north and an intermittent stream .6 km to the west. The site measures 15 x 7 m and contains no cultural materials other than two discrete hearths. No carbon stain was observed at either feature.

FB 13404

FB 13404 is a small hearth at the distal end of an alluvial fan that drains the northern Franklin Mountains. Elevation is 1266 m amsl. The site is approximately 6 km south-southwest of the Dona Ana Range Camp and about .9 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 1.5 km to the north and an intermittent stream .2 km to the west. This site measures .3 x .3 m and is represented by a carbon stain along the eroding edge of a small drainage cut. An unmodified chert flake was observed about 8 m from this stain and may be associated.

FB 13405

FB 13405 is an isolated hearth at the distal end of an alluvial fan that drains the northern Franklin Mountains. Elevation is 1266 m amsl. This site is approximately 6.3 km south-southwest of the Dona Ana Range Camp and about 1.2 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 1.6 km to the north and an intermittent stream .1 km to the west. This hearth measures 2 x 1 m and consists of fire-cracked limestone rock. No carbon stain was observed and no other artifacts were noted in association.

FB 13406

FB 13406 is a Formative period site (possible structure) at the south end of a small rise on an alluvial fan near the northern Franklin Mountains. Elevation is 1280 m amsl. It is approximately 6.3 km south-southwest of the Dona Ana Range Camp and about .3 km north of the southern boundary of Dona Ana Range. The nearest major hydrological features are a playa 3 km to the north and an intermittent stream .4 km to the west. A small erosional cut bisects the site and has eroded the main feature. The site measures 40 x 10 m and contains an unspecified brownware sherd, a granitic slab metate, cores, tested obsidian nodules, angular hammerstones, pieces of fire-cracked limestone rock, and two carbon stain features. The site appears to be composed of features and artifacts usually associated with a long-term, seasonally occupied camp. The size, depth, and associated artifacts suggest the possibility of structural remains.

FB 13407

FB 13407 is an isolated hearth on an alluvial fan east of the northern Franklin Mountains. Elevation is 1269 m amsl. The site is approximately 6.9 km south-southwest of the Dona Ana Range Camp and about .4 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 2.7 km to the north and an intermittent stream .2 km to the west. The hearth measures 1 x 1 m and is of fire-cracked limestone rock and nonutilized chert flakes. No carbon stain was observed.

FB 13408

FB 13408 is a Formative period site on an alluvial fan extending eastward from the northern Franklin Mountains. Elevation is 1263 m amsl. It is approximately 6.9 km south-southwest of the Dona Ana Range Camp and about .6 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 2.6 km to the north and an intermittent stream .2 km to the west. This site is in a maneuver area and has been impacted by erosion and deflation. This site measures 14 x 10 m and contains unspecified brownware sherds, a worked (drilled) brownware sherd, limestone cores, quartzite manos, unmodified obsidian flakes, quartzite debitage, and an angular limestone hammerstone. No features or fire-cracked rock were recorded at this site, which appears to be a campsite situated to exploit plant resources in the area.

FB 13409

FB 13409 is an isolated hearth in an eroded wash near the northern Franklin Mountains. Elevation is 1269 m amsl. This site is approximately 6.8 km south-southwest of the Dona Ana Range Camp and about .3 km north of the southern boundary of Dona Ana Range. The nearest major hydrological features are a playa 2.8 km to the north and an intermittent stream 1.2 km to the west. The hearth measures .5 x 2.5 m and is represented by a diffuse scatter of fire-cracked limestone rock. No carbon stain was observed and no other artifacts were noted in association.

FB 13410

FB 13410 is an isolated hearth just off a low rise on an alluvial fan east of the northern Franklin Mountains. Elevation is 1275 m amsl. It is approximately 6.8 km south-southwest of the Dona Ana Range Camp and about .2 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 2.9 km to the north and an intermittent stream .5 km to the west. It measures 2 x 2 m and consists of a scatter of fire-cracked limestone and quartzite rock. No carbon stain was observed and no other artifacts were present.

FBH 169

FBH 169 is a historic site on an alluvial fan in the foothill area of the northern Franklin Mountains. Elevation is 1281 m amsl. The site is approximately 6 km southwest of the Dona Ana Range Camp and about 2.7 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 2.5 km to the northeast and an intermittent stream .3 km to the southeast. It measures 40 x 10 m and is composed of one historic feature. The feature includes a 10-x-10-m area of banked soil that resembles a small reservoir. The interior depth is approximately 3 m. The outside of this feature has associated artifacts that suggest the remains of a razed wellhead. The site includes an area measuring approximately 5 x 5 m and is composed of a concentration of historic artifacts that suggests the area served as the central focus of a tent camp. The site appears to date to the 1880s and may be related to mining activities in the region.

FB 287

FB 287 is a previously recorded site on an alluvial fan adjacent to the northern Franklin Mountains. Elevation is 1269 m amsl. It is approximately 6.1 km south-southwest of the Dona Ana Range Camp and about .7 km north of the southern boundary of Dona Ana Range. The nearest hydrological features

are a playa 3 km to the north and an intermittent stream .4 km to the west. The site measures 400 x 350 m and contains unspecified brownware ceramics, granitic slab metates, one-hand manos, one /mano/metate, one narrow trough metate, unmodified chert and obsidian flakes, cores, one Archaic style projectile point, and fire-cracked rock features. Features include 27 fire-cracked rock concentrations, 15 with carbon stains, a single carbon stain, and an extensive stain or midden. Two of the large fire-cracked rock features may represent roasting pits. The site function appears to have been focused on plant processing and it may have been one of the central camps in the region.

FB 289

FB 289 is a lithic site situated on a small rise on an alluvial fan east of the northern Franklin Mountains. Elevation is 1275 m amsl. This previously recorded site is approximately 6.7 km south-southwest of the Dona Ana Range Camp and about .4 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 3.5 km to the north and an intermittent stream .6 km to the west. It measures 45 x 30 m and contains flakes, unmodified cores, flakes, obsidian nodules, and angular debris. The site represents a lithic procurement locus but previous collections indicate the presence of scrapers and choppers, which add lithic reduction and, potentially, processing to plausible site functions.

FB 290

FB 290 is a small previously recorded site located on an alluvial fan adjacent to the northern Franklin Mountains. Elevation is 1272 m amsl. The site is approximately 6.6 km south-southwest of the Dona Ana Range Camp and about .6 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 3.5 km to the north and an intermittent stream .2 km to the east. The site measures 30 x 20 m and contains utilized chert flakes, utilized quartzite flakes, and four fire-cracked rock features, one with a carbon stain.

FB 291

FB 291 is a previously recorded site on a lower alluvial fan approximately 2 km east of the northern Franklin Mountains and 7 km south of Dona Ana Range camp. A large playa lake bed is 3 km north of the site and an intermittent drainage is within 100 m to the east. The site measures 25 x 25 m and consists of two limestone fire-cracked rock features, one of which exhibits vague stains and one chert flake. The site is considered to represent limited cooking-related activities.

FB 299

FB 299 is a previously recorded Formative period site on an alluvial fan east of the northern Franklin Mountains. Elevation is 1269 m amsl. The site is approximately 5.7 km southwest of the Dona Ana Range Camp and about 2.2 km to the north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 2 km to the northeast, and an intermittent stream that bisects the site. The site measures 490 x 420 m and contains unspecified brownware sherds and rims, fire-cracked limestone rock, unmodified flakes, cores, unifaces, bifaces, and ground stone fragments. The site area includes 20-plus hearth features, including one burned rock midden or possible roasting pit.

FB 401

FB 401 is a previously recorded Mesilla phase site on an alluvial fan that drains the northern Franklin Mountains. Elevation is 1254 m amsl. The site is approximately 5.5 km southwest of the Dona Ana Range Camp and about 2.7 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 1.8 km to the northeast, with an intermittent stream forming the southern boundary of the site. The site measures 650 x 200 m and contains unspecified brownware, El Paso Brown, Mimbres Boldface, and Mimbres Classic ceramics, mano and metate fragments, unmodified flakes, cores, bifaces, a hammerstone, and thousands of pieces of fire-cracked rock. It contains extensive stains, 20-plus hearths or fire-cracked rock concentrations, and several burned rock middens. This is one of the largest and most complex sites in the region and may have been one of the main localities of activity. The focus of this site appears to be centered on plant processing and it may have been related to the many outlying activity areas in the region.

FB 402

FB 402 is a previously recorded site on an alluvial fan adjacent to the northern Franklin Mountains. Elevation is 1260 m amsl. The site is approximately 5.4 km southwest of the Dona Ana Range Camp and about 3.3 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 1.3 km to the northeast and an intermittent stream that forms the southern boundary of the site. The site measures 500 x 400 m and contains unspecified brownware, El Paso Brown rims, a worked sherd, unmodified flakes, cores, ground stone, hammerstones, and fire-cracked rock features. It is similar to FB 401 in that it has at least 10 hearths or fire-cracked rock features, and extensive middens and stains.

FB 707

FB 707 is a lithic site located along the lower slopes of the northern Franklin Mountains. Elevation is 1320 m amsl. The site is approximately 7 km southwest of the Dona Ana Range Camp and about 1.6 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 3.2 km to the northeast and an intermittent stream that forms the northern boundary of the site. The site measures 60 x 80 m and contains chert cores and flakes. This site was originally reported as including a rock circle but upon re-inspection, this feature was not relocated. A linear rock alignment was present, however, but appeared to represent recent disturbance, as military trash was associated.

FB 708

FB 708 is situated on an alluvial fan adjacent to the northern Franklin Mountains. Elevation is 1305 m amsl. This previously recorded, limited activity site is approximately 8 km south-southwest of the Dona Ana Range Camp and about .3 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 3.9 km to the north-northeast and an intermittent stream 1.2 km to the east. It measures 80 x 50 m and contains unmodified chert flakes and chert cores. This site is probably a lithic procurement area.

FB 736

FB 736 is situated on an alluvial fan adjacent to the northern Franklin Mountains. Elevation is 1256 m amsl. This previously recorded limited activity site is approximately 5.8 km south-southwest of the Dona Ana Range Camp and about 1.7 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 2.2 km to the north-northeast and an intermittent stream 1.3 km to the east. It measures 5 x 5 m and contains a scatter of fire-cracked rock, originally reported as two fire-cracked rock features.

FB 745

FB 745 is on a distal end of an alluvial fan east of the Franklin Mountains at an elevation of 1254 m amsl. The site is approximately 5.5 km south of Dona Ana Range Camp and 2 km east of the Franklin Mountains escarpment. Stewart Lake, a large playa basin, is approximately 2 km north of the site and an intermittent drainage is 400 m to the north. The site consists of five hearth features composed of fire-cracked limestone rocks in a 60 x 50 m area; one feature includes a charcoal stain. Chert flakes and a hammerstone were associated with the features.

FB 748

FB 748, a previously recorded site, is on a sandy ridge tip of an alluvial fan adjacent to the northern Franklin Mountains. Elevation is 1266 m amsl. This site is approximately 5.3 km southwest of the Dona Ana Range Camp and about 3.6 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 1.2 km to the east and an intermittent stream .5 km to the south. The site has been bisected by a road. It measures 160 x 90 m and contains unspecified brownware sherds, El Paso Brown rim sherds, unmodified flakes, cores, four extensive stains or middens, and a possible roasting pit feature.

FB 755

FB 755 is a previously recorded isolated hearth on an alluvial fan adjacent to the northern Franklin Mountains. Elevation is 1272 m amsl. The site is approximately 6.8 km south-southwest of the Dona Ana range Camp and about .2 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 3.8 km to the north and an intermittent stream .2 km to the east. The hearth measures 3 x 3 m and consists of a limestone fire-cracked rock concentration and an associated carbon stain.

FB 761

FB 761 is a limited activity site on an alluvial ridge adjacent to the northern Franklin Mountains. Elevation is 1275 m amsl. The site is located approximately 7 km southwest of the Dona Ana Range Camp and about .2 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 3.7 to the north and an intermittent stream .8 km to the west. The site measures 30 x 25 m and contains unmodified flakes and cores. Previous data included unimarginally retouched flakes. No features were observed. This site may represent a lithic procurement area.

FB 762

FB 762 is on the distal end of an alluvial fan that drains the northern Franklin Mountains. Elevation is 1266 m amsl. The previously recorded site is approximately 6.2 km south-southwest of the Dona Ana Range Camp and about .7 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 3.2 km to the north and an intermittent stream .8 km to the west. This site measures 225 x 175 m and contains lithics and 14 fire-cracked rock scatters, three of which meet feature criteria. Sufficient cultural materials were located to consolidate previously recorded sites FB 763, 764, 765, 766, and 767 into this site.

FB 769

FB 769, a previously recorded site, is on an alluvial fan east of the northern Franklin Mountains. The elevation is 1264 m amsl. The site is approximately 6.8 km south-southwest of the Dona Ana Range Camp and about .4 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 3.5 km to the north and an intermittent stream 1 km to the west. The site measures 16 x 20 m and contains nonutilized retouched flakes, unspecified brownware sherds, two stain features, and one fire-cracked rock feature with a stain.

FB 772

FB 772 is a previously recorded site on an alluvial fan adjacent to the northern Franklin Mountains. Elevation is 1273 m amsl. The site is approximately 7.7 km south-southwest of the Dona Ana Range Camp and about .2 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 3.9 km to the north and an intermittent stream 20 m to the east. The site measures 30 x 12 m and contains one unmodified chert flake and two fire-cracked features (one with a carbon stain) and one stain feature.

FB 6118

FB 6118 is a previously recorded site on a ridge top adjacent to the northeastern end of the Franklin Mountains. Elevation is 1281 m amsl. The site is approximately 5.3 km southwest of the Dona Ana Range Camp and about 3.5 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 2.5 km to the east and an intermittent stream .2 km to the south. The site measures 30 x 15 m and is composed of unmodified and unmarginally retouched flakes and seven fire-cracked rock features. This site appears to have been surface collected by previous surveys as there was a grid established on the surface and pin flags were still standing.

FB 6119

FB 6119 is a previously recorded Formative period site located on a ridge top, adjacent the northeastern end of the Franklin Mountains. Elevation is 1281 m amsl. The site is approximately 5.3 km southwest of the Dona Ana Range Camp and about 3.5 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 2.4 km to the east and an intermittent stream .2 km to the south. It measures 18 x 18 m and consists of unspecified brownware sherds and three fire-cracked limestone rock features (two with associated carbon stains) and one stain without fire-cracked rock.

FB 6120

FB 6120 is a previously recorded isolated hearth on a ridge top adjacent the northeastern end of the Franklin Mountains. Elevation is 1281 m amsl. The site is approximately 5.3 km southwest of the Dona Ana Range Camp and about 3.5 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 2.5 km to the east and an intermittent stream .3 km to the south. The hearth measures .5 x .5 m and consists of one fire-cracked limestone rock feature. No carbon stain was observed.

FB 6121

FB 6121 lies on a ridge top adjacent the northeastern end of the Franklin Mountains. Elevation is 1281 m amsl. The site is approximately 5 km southwest of the Dona Ana Range Camp and about 3.5 km north of the southern boundary of Dona Ana Range. The nearest hydrological features are a playa 2.3 km to the east and an intermittent stream .3 km to the south. The site is bisected by a dirt road, which is an erosive factor, and may be impacted further by vehicle traffic. The site measures 66 x 30 m and contains cores and unmodified flakes. Features include one stain and five fire-cracked rock concentrations, one with a stain.

6 SUMMARY

Three general site types occur within the study area:

1. lithics-only sites indicative of the quarry/reduction-related activities of upper alluvial chert and obsidian raw material resources,
2. low density artifact scatters with hearth features, including isolated hearths, and
3. Extensive, relatively high density artifact scatters with middens.

Sixteen of the prehistoric sites include features and low density artifacts, or no artifacts at all. Only site FB13408 with low density artifacts falls out of this group due to lack of feature indications. The site contained four ceramic sherds and ten lithics, but since neither fire-cracked rock nor features were observed, it qualifies for none of the three general groups of sites.

Assemblages observed on the low density sites appear generally similar to high density sites. These assemblages suggest that most of the low density sites may be functionally similar to their larger neighbors, but represent a lower intensity of use. Although temporal ceramic assemblage data do not particularly suggest multiple components or successive visitations or utilizations of the large sites, localization of ceramic and lithic concentrations do. Likewise, the sheer number of hearth features may be considered indicative of revisitation by small groups, while large stains and roasting pits suggest communal efforts by presumably larger groups.

The large fire-cracked rock features on several sites in the study area are strikingly similar. Recorded samples include thousands of fire-cracked limestone rocks with an estimated total weight of several tons. Most often the rock comprising these features is spread over an area of 5 m² or more and accompanied by charcoal stains of nearly equal extent.

Previous researchers have discussed similar burned rock features (Carmichael 1986: 220; Seaman et al. 1988:56-57; Whalen 1977:20-21), which have been described variously as large hearths, ovens, and sotol pits or ring middens. Archeological investigation at the survey level cannot distinguish the depth or true form of such manifestations, but surface appearance alone indicates that these features are not ordinary hearths and probably represent intensive, special use baking or roasting pits.

Excavations of similar features in the eastern Hueco Bolson have been reported by Whalen (1977). O'Laughlin (1980) described examples at the Keystone Dam site for which projections of total fire-cracked rock weights were tabulated for three large fire-cracked rock features. Total estimates based

on test excavations ranged from 1,179 to 13,215 kg or 2.25 to 14.5 tons. These features typically included extensive staining from 30 to 55 cm thick.

It is presently unclear what relationship the presumed roasting pits or large fire-cracked rock features have to features variously described as ring middens, midden circles, mescal or sotol pits, and circular or semicircular accumulations of unexcavated fire-cracked rock (O'Laughlin 1980:105). The large features located during the present survey typically lack the circular form or elevation commonly observed in what have been defined as ring middens, which often rise over a meter above the surrounding ground surface and are up to 15 m in diameter (Katz 1983:129). Ring middens typically include a central depression or excavated area, presumably resulting from being emptied or cleaned out after use. Precisely where definitional boundaries lie between large fire-cracked rock features and other variously described fire-cracked rock features remains unclear.

Several large "circles of fire-cracked rock" (O'Laughlin 1980:105) have been reported near El Paso. These include examples on alluvial fan slopes just west of the Hueco Mountains, as well as on the alluvial slopes below the eastern flank of the Franklin Mountains. Similar features have also been located west of the Hueco Mountains during a limited survey of the Middle Desert zone (Mbutu and Peter 1994). The large features recorded during the present study most closely resemble burned rock middens or sheet middens reported from West Texas (Mallouf 1985; Sale and Gibbs 1994). Such features, along with the ring middens and crescent middens, occur throughout the Trans-Pecos culture region, where an Archaic style hunting and gathering subsistence continued throughout prehistoric times, little affected by the development of ceramics and agriculture to the west. The relationship between burned rock middens and ring middens remains unclear, but the use of such features does appear to increase drastically after A.D. 700 (Mallouf 1985:155) and they are generally attributed to the baking of succulents. The presence of large fire-cracked rock features or roasting pits on alluvial fans adjacent to desert mountains is considered to represent the gathering and processing of leaf succulents. This group of plants includes sotol (*Dasylirion wheeleri* or *texanum*), agave (*Agave lechuguilla*), yucca (*Yucca baccata*), and possibly prickly pear cactus (*Opuntia phaeacantha*).

Carmichael (1986:213-214) remarked that:

In addition to mesquite, grasses, and other annuals, agave would have been available in some parts of the survey area. O'Laughlin (1980) reports several large fire-cracked rock hearths which are interpreted as pit-backing [*sic*] features. These features date to the early Formative and possibly also to the late Archaic (O'Laughlin 1980:233). Similar features, exposed as rock mounds, are recorded on at least two sites in this study area which have substantial Archaic components (FB-1601, -1607). Both sites are within easy walking distance of the North Franklin Mountains where stands of *Agave lechuguilla* are available today. The possibility that these sites represent baking of succulents by Archaic groups warrants further study.

Ethnographic accounts detail the processing of agave and sotol by protohistoric peoples such as the Mescalero Apache, who once may have foraged within the project area. According to Opler (1983:422):

Agave (mescal) was especially plentiful in Mescalero territory, and there was great dependence on this food staple. In late spring, when the reddish flower stalks began to grow, the women traveled to an area where the plants were abundant to pry up the crowns that lay at the base of the new stalk growths and bake them in underground ovens. Men accompanied the women to help them dig the large roasting pit, to assist in carrying the heavy crowns to the oven, to stand guard while the work continued, and to help in the transportation of the baked material to the home encampments. Mescal was eaten fresh, was sun-dried and stored in parfleches for later use, or was placed in sealed caves for emergencies or times of scarcity. There was little edible plant material within the Mescalero range that the women overlooked. Sotol, though its crowns were smaller than those of mescal, was

prepared in the same manner. The stalks of bear grass and amole were roasted, peeled, and eaten. The fruits and even the flowers of datil were utilized. The tunas of the prickly pear cactus, once the spines were brushed from them, were roasted, split, and eaten, and the fruits of many other cacti were gathered and relished.

Both agave and sotol have been observed along the Franklin Mountains adjacent to the survey area. This presence, along with the sparsity of ground stone and the high frequency of hearths encountered on sites during this project is highly suggestive of intensive, specialized activities sites. However, recovery of identifiable succulent remains from excavation is rare. Carbonized plant seeds and stems are more commonly recovered, but fleshy remains are far more perishable and seldom identified from feature contexts. Radiocarbon samples obtained from one of two roasting pits in the San Andres Mountains north of the present study yielded a date of circa A.D. 1659 (Sale and Laumbach 1989:60). Associated remains were identified as probable agave or sotol.

While only 12.5 percent of the prehistoric sites included ground stone, 67 percent of those sites also included middens and all of the sites with middens included ground stone and ceramics. The midden, ceramic, and ground stone correlation, however, suggests that ground stone use in the study area is predominantly related to the Formative period sites associated with roasting activities. This correlation does not necessarily indicate a direct relationship between baking pits and ground stone tool use. Rather an indirect relationship is suggested here. Evidence from previous research in West Texas indicates that large roasting or baking features were often re-used (Marmaduke 1978:42; Sale and Gibbs 1994 draft:189). Along with the multiple-use loci concept, succulent baking time of 24-48 hours (Marmaduke 1978:42) provides for extended periods of time spent on or near sites, during which a range of other activities might be conducted. Certainly, procurement and processing of other locally available food resources would prove profitable under such circumstances. It is the contention of the author then, that ground stone use may represent activities indirectly related to primary site function in some cases.

PLAYA LAKE ASSOCIATIONS

Prehistoric sites associated with playas in the Hueco Bolson are recognized and discussed by Whalen (1977) and Carmichael (1986), who have suggested that sites, particularly those representing the ceramic or Formative period, are often located near such resources. However, O'Laughlin and Martin (1989:297) contended that playa location may be of less importance to prehistoric occupation than once thought:

Additionally, it has also been inferred that the availability of seasonal water is the prime determinant of site location and that locations with more reliable sources of water would have seen more frequent reoccupation . . . However, this does not appear to be a determining [factor] for site location in the Loop 375 project area. Only about one-third of the small camps and large camps were located within 400 meters of playas.

Stewart Lake, located within 1 km of the northeastern corner of the current project area, is an extensive playa lake bed covering 34.2 hectares (600 m in diameter). This large ponding basin acts as a shallow reservoir during wet periods. Grasses and forbs, as well as wildlife attracted to its margins, form a present-day localized resource focus as evidenced by rabbit pellet densities and the empty shotgun shells of dove hunters.

Stewart Lake does not exhibit the typical evidence (by Hueco Bolson standards) of playa-oriented site focus. Carmichael's survey, which included the lake and its environs, recorded surprisingly few sites there. Conversely, Coe Lake, an extensive playa approximately 5.6 km to the north and similarly situated with respect to the nearby mountain escarpments, apparently supported significant Formative

period settlements (Carmichael 1986). Exactly what factors contributed to this contrast in playa orientation of prehistoric groups is presently unclear, since Stewart Lake undoubtedly created a resource focus or concentration in prehistoric times, as it does today.

Lithic material and succulent plant resources from the alluvial fan and escarpment appear to have provided the main attraction of the project area to prehistoric peoples. Sandy, distal ends of alluvial ridges evidently provided mesquite fuels and soils suitable for construction of baking or roasting facilities required for processing succulents.

TEMPORAL DISCUSSION

Paleo-Indian Period

Although no Paleo-Indian artifacts were located during the course of this survey, several Folsom projectile points have been recovered from FB1613, which lies just outside the present project area. Though reports are not yet available, excavations at FB1613 have resulted in identification of both Paleo-Indian and Formative period components (Department of the Army 1991:19, 1992 Draft).

Archaic Period

The Archaic period is better represented within the study area, with all six of the projectile points documented during survey attributable to that period (Figure 8). Unfortunately, four of these projectile points were isolated manifestations and the remaining two were recovered from sites with ceramics. None of the archeological sites are presently assignable to the Archaic period, but it is possible that several of the sites may relate to Archaic activities.

Formative Period

Twenty-three percent of the total prehistoric sites ($n=11$) and 31 percent of the sites with features included ceramics. Ten of the eleven sites may be tentatively assigned to the Pithouse period or Mesilla phase of the Jornada Mogollon. The remaining site (FB299) included three El Paso Polychrome sherds assignable to the Pueblo period or El Paso phase. Only five of the ceramic sites however, can be temporally assigned to any phase with certainty. These five include either diagnostic brownware rimsherds, El Paso Polychrome, or Mimbres Black-on-white intrusives. Given that the distribution of ceramics on these sites is often localized, it is likely that multiple occupations from one or more temporal periods are represented. The remaining six sites with ceramics (54.5 percent) include five or fewer sherds and lack diagnostic samples. One of these sites (FB287) included a single sherd and an Archaic-style projectile point within a 140,000-m² site area, with 27 features, further complicating accurate temporal assignment.

Rather than assign the sites that include brownware solely to the ceramic period, a potential multicomponent assignment is preferred. This designation is supported by the presence of features equal to or greater than number of artifacts and documentation of two Archaic style projectile points on sites with low density ceramics (FB287, FB13397). Problems in temporal assignment based on some Archaic style projectile points are acknowledged, having been discussed by several researchers and perhaps most simply stated by Carmichael (1986:100): "There are also problems in using point types to distinguish Late Archaic sites from Early Formative sites. A number of the recognized types are known to occur in both preceramic and ceramic contexts."

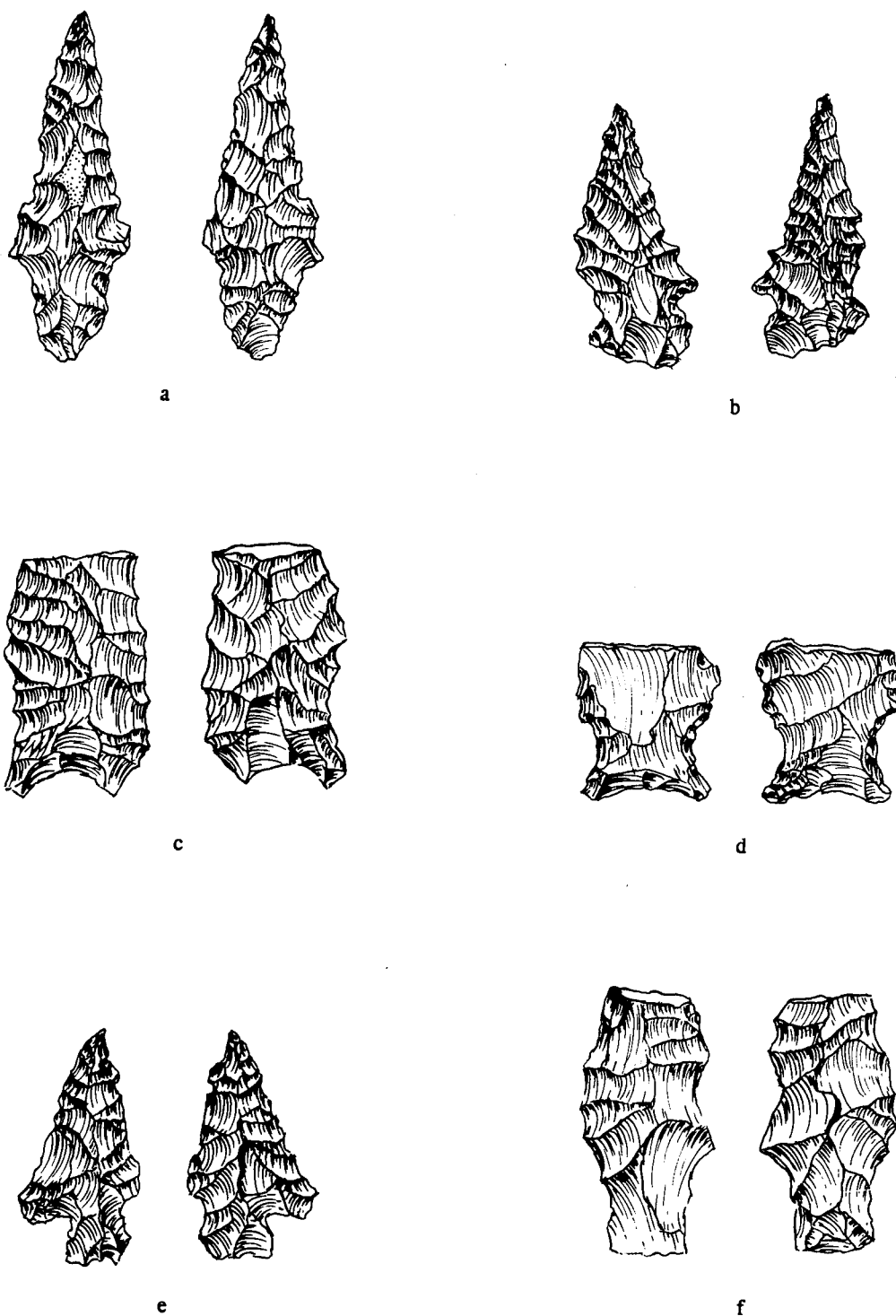


Figure 8. Illustrations of Archaic projectile points recovered from the survey area: (a) Untyped from FB 13397; C#5553028; (b) Untyped from FB 287; C#56551001; (c) Bajada isolate; C#5651006; (d) Uvalde isolate; C#5551002; (e) Ellis-like isolate; C#5453007; (f) San Pedro-like isolate; C#5453001.

Four isolated projectile points recovered from the project area represent Archaic types (see Figure 8a, 8c, 8d, and 8f) that are not typically recovered from ceramic period contexts. The presence of these types along with two additional Late Archaic points (see Figure 8b and 8e) and the paucity of ceramic isolates recorded (2.7 percent of the total isolates) suggest substantial Archaic period utilization of the project area and, most likely, the sites as well.

As a result of the potential presence of Archaic period components at many of the recorded sites, all sites that exhibit brownware are considered to include Mesilla phase components and should be listed as "potentially multicomponent." All others should be considered "unassigned." Post-Mesilla phase temporal diagnostics were limited to three El Paso Polychrome sherds located on FB299, and two isolated observations of similar wares. Since only three observations of El Paso Polychrome represent utilization of the project area after ca. A.D. 1200, post-Mesilla phase activity for the area appears minimal and inconsequential.

7 CONCLUSIONS

The results of this study suggest that sites adjacent the northern Franklin Mountains reflect exploitation of two sets of resources. One group appears to represent the quarrying of outcrop and river-deposited lithic raw materials, available along the upper alluvial ridges. The other group of sites reflects the processing of locally available food resources.

The latter group of sites includes two subgroups, each indicating different economic strategies. The sites composed of isolated features and features with associated low density assemblages appear to indicate brief stays, primarily concerned with cooking activities. Although the resources being processed remains speculative, assemblages do not indicate butchering activities and artifact types appear similar to those observed on larger sites with middens. Substantial quantities of rock are necessary to maintain hearth temperatures for extended periods of time, such as required for baking (Carmichael 1986:200) therefore, inference drawn from these factors suggests that these sites represent floral processing locations, possibly small scale succulent baking.

The presence of fire-cracked rock on 83 percent of the low density sites at an average 121.6 pieces recorded per site supports this contention. Based on excavation of numerous features in West Texas (Bandy 1980:215), hearths may have supplanted middens in response to reduced group size dictated by food resource density. He postulated that hearths may have functioned in a fashion similar to larger baking features but requiring a lower minimum group size and resource density to function properly.

The high density sites with middens are considered to primarily represent succulent processing loci. Though the function of large stain features included within this group of sites remains unknown, the extensive burned rock middens and suspected roasting pits are indicative of baking activities, presumably conducted by large groups of individuals. These features are notably similar to those documented in West Texas by previous research (Bandy 1980; Mallouf 1985; Marmaduke 1978; Sale and Gibbs 1994; and others) as well as the Guadalupe Mountains (Clifton 1990; Katz 1983), the Hueco Bolson, (Carmichael 1986) adjacent the Hueco Mountains (Burgett, personal communication 1994), and on Otero Mesa (author's observation).

Though common throughout West Texas, the use of succulent baking pits is not widespread within the Jornada culture region. Distribution of these features seems to be restricted to regions south of Alamogordo, New Mexico. With the exception of two roasting pits or baking features reported from the San Andres Mountains (Sale and Laumbach 1989:60), large roasting features are not present in the Tularosa basin or Rio Grande valley nor reported from areas west of the Rio Grande. The Franklin

Mountains appear to lie within the northern periphery of roasting pit distribution. With similar resources present throughout the alluvial topographic zones of the Jornada region, just why succulent baking practices were not more widespread remains a mystery. Evidently, at least some of the Mesilla phase groups were familiar with baking pit technology; why not all is surely a topic for future research.

The extensive stains recorded as middens during this study do not include artifact densities typical of trash middens. O'Laughlin (1987:35) stated that such features "have often been found to be the remains of structures when excavated." If these features do represent structures, then temporary use is suggested by the associated assemblages.

The results of the current study suggest several local and regional implications.

1. Lithic quarry sites may be expected along upper alluvial fan slopes wherever cherts or other suitable materials are present in the detrital rock matrix or where river gravels are available.
2. Over 90 percent of the sites located along the Lower Alluvial Fan zone near the study area may be expected to contain thermal features.
3. Sites with numerous fire-cracked rock features, potentially including roasting pits, are likely to be found along the lower and distal alluvial fans, particularly those related to limestone escarpments.
4. Plant processing sites will most likely occur in the sandier soils near the resource, where pit preparation is facilitated and fuels (mesquite) are present.
5. Playa lakes may not have provided the main attraction for prehistoric utilization of some areas where they occur.
6. Low density sites with features may represent functions similar to those of the larger, high density sites, but on a smaller scale.
7. Numerous, short-term habitational structures may be present in the study area, represented by extensive stains.
8. Intensive utilization of the study area was focused on succulent preparation and occurred predominantly during the Mesilla phase of the Formative period.
9. Large processing areas are not restricted temporally to El Paso phase, as suggested by Whalen (1978:21).

8

NATIONAL REGISTER ELIGIBILITY

Although it is impossible to fully assess the National Register eligibility of archeological sites based solely on surficial observations, the National Register Criterion D (information potential) is applicable to many sites in the project area. Criterion D encompasses cultural properties that have the potential to answer, in whole or in part, important research questions relating to human history. Criterion D has two requirements that must be met for a property to qualify:

1. The property must have, or have had, information to contribute to our understanding of human history or prehistory.
2. The information must be considered important.

To address the first requirement, it may be demonstrated that numerous sites contain carbon stains, suggesting intact deposits. Such deposits are likely to contain not only sufficient quantities of charcoal for radiocarbon dating, but carbonized plant remains suitable for botanical studies. Analyses of these samples may provide pertinent data on chronology, feature function, subsistence economics, and seasonality.

Fulfillment of the second requirement of Criterion D is not facilitated by the temporally unassigned sites from this project. Specific research questions regarding any particular period of prehistory are unapproachable, with temporally unassigned site data. Should datable remains be recovered from these sites, however they may be then deemed eligible.

The vast majority of the temporally assigned sites located during this study appear to result from activities during the Mesilla phase of the Formative period. Whalen has recommended a preliminary excavation program directed at Mesilla phase sites in Maneuver Area I on Fort Bliss. The rarity of village sites and the fact that "they represent the oldest and least understood sedentary occupation in the Hueco Bolson" (1978:55) are among the reasons cited for this program. Redefinement of chronological parameters and community structures/social organization are also areas in need of further research. In addition to these avenues of inquiry, just why the use of large baking features is limited to the Mesilla phase and extreme southwestern New Mexico, deserves further research. If the Mesilla phase utilization of the study area arose in response to climatic fluctuation or some other motivating force such as population pressure, pertinent information may be recovered from these sites.

With these considerations in mind, all ceramic-bearing sites with stains located in the study area may be eligible for nomination to the National Register. Furthermore, all sites with stains may be eligible,

pending test excavations, and testing should be required on all sites with indications of features (fire-cracked rock) to determine the presence/absence of intact deposits.

Table 9 provides a list of sites considered eligible and sites considered potentially eligible for recommendation to the National Register of Historic Places.

Table 9 National Register Eligibility		
FB# Sites Considered Eligible	FB# Sites Considered Potentially Eligible	FB# Sites Considered Ineligible
401	287	289
402	290	707
299	291	708
748	736	761
	745	13382
	755	13383
	762	13384
	769	13385
	772	13386
	6118	13391
	6119	13398
	6120	13399
	6121	
	13387	
	13388	
	13389	
	13394	
	13395	
	13396	
	13397	
	13400	
	13401	
	13402	
	13403	
	13404	
	13405	
	13406	
	13407	
	13408	
	13409	
	13410	
	13411	
	H169	
Total Number of Sites	4	33
		12 = 49

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